COLUMBIA LIBRARIES OFFSITE
HEALTH SCIENCES RESTRICTED
HR01621190
RECAP



SERIAL v. 19
L 1883
Columbia University
in the City of New York
College of Physicians and Surgeons
Reference Library

the room, but must be used as a book of reference simply, in the presence of the attendant, and replaced in its exact order on the shelf; provided, only, that members of the Hospital Staff may withdraw, at any time, such volume as they may need for a period of five days."

CINCINNATI
HOSPITAL
LIBRARY

CINCINNATI
HOSPITAL
LIBRARY

CINCINNATI HOSPITAL LIBRARY

Acc# 102

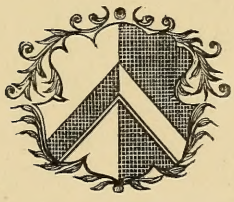
SAINT BARTHOLOMEW'S HOSPITAL REPORTS.

EDITED BY

W. S. CHURCH, M.D.

AND

JOHN LANGTON, F.R.C.S.



VOL. XIX.

LONDON:
SMITH, ELDER, & CO., 15 WATERLOO PLACE.
1883.

CINCINNATI HOSPITAL LIBRARY

Ballantyne Press
BALLANTYNE, HANSON AND CO.
EDINBURGH AND LONDON

IN EXCHANGE.

Guy's Hospital Reports.
St. Thomas's Hospital Reports.
Pharmaceutical Society's Journal and Transactions.
American Journal of Medical Science.
Madras Medical Journal.
Société des Sciences médicales de Lyons.
Surgeon-General's Office, War Department, U.S.A., per Mr. Wesley, 81 Fleet Street, E.C.
Revue des Sciences médicales, M. le Docteur G. Hayem, Rédacteur du Journal, aux soins de M. Masson, 17 Place de l'Ecole de Médécine, Paris.
Le Progrès Médical.
Annales de Dermatologie et de Syphilographie, Dr. A. Doyon, Ueiage, near Grenoble, France.
The Chicago Medical Journal and Examiner, Dr. Byford (Messrs. Keen, Cook, & Co., Chicago, Illinois).
The Transactions of the American Medical Association, Dr. William Lee, 2111 Pennsylvanian Avenue, Washington, D.C., per Smithsonian Institution.
Centralblatt für Chirurgie, herausgegeben von F. König, E. Richter, R. Volkmann (Messrs. Breitkopf & Härtel, Leipzig).
Transactions of the American Gynecological Society, Dr. James R. Chadwick, Clarendon Road, Boston, Mass., U.S.A.
Transactions of the New York Academy of Medicine.
The Proceedings of the Medical Society of the County of Kings, Brooklyn, U.S.A.
Mémoires de la Société de Médecine et de Chirurgie de Bordeaux. Dr. A. Demons, 45 Cours de Tourny, Bordeaux.
The Journal of Nervous and Mental Disease, edited by William J. Morton, M.D., New York (Messrs. G. P. Putnam's Sons, 18 Henrietta Street, Covent Garden).

Digitized by the Internet Archive
in 2010 with funding from
Open Knowledge Commons

http://www.archive.org/details/saintbartholomew19stba

CONTENTS.

PAGE

List of Subscribers xi

In Memoriam—James Shuter. By Luther Holden . xxxi

Art.

I. An Anecdote of Sydenham. By Samuel Gee, M.D. . 1

II. On Criminal Responsibility in the Insane. By T. Claye Shaw, M.D. 5

III. On a Peculiar Numbness and Paresis of the Hands. By J. A. Ormerod, M.D. 17

IV. Cases of Extra-Uterine Fœtation. By J. Matthews Duncan, M.D., and J. Mason, M.B. 27

V. A Case in which a Pocket-Knife Remained for Seven Months in the Post-Pharyngeal Tissue. By Thomas Smith 45

VI. A Case of Pyæmia, consequent on an Abscess Formed after the Impaction of a Set of Artificial Teeth in the Pharynx, with Remarks on the Impaction of Foreign Bodies in the Pharynx and Œsophagus, and on their Passage through the Stomach and Intestines. By W. S. Church, M.D. . . . 51

VII. On the Precipitants of Albuminous Substances in the Urine. By Vincent Harris, M.D. . . . 73

VIII. Five Cases of Tetanus, with some Remarks on its Pathology. By Anthony A. Bowlby . . . 85

IX. Notes of the Proceedings of the International Colonial Medical Congress at Amsterdam in 1883. By Dyce Duckworth, M.D. 99

X. Two Cases of Extirpation of the Uterus and Ovaries for Cancer, under the care of Dr. J. Matthews Duncan and Mr. Willett. By John Mason, M.B. . 111

XI. Pernicious Vomiting of Pregnancy. By J. Matthews Duncan, M.D., and W. J. Collins, M.D. . . 121

XII. On Trephining the Skull in Traumatic Epilepsy. By W. J. Walsham 127

XIII. A Case of Rheumatic Purpura with Notes. By J. Wickham Legg, M.D. 177

XIV. Cases of Congenital Pemphigus Persistent from Birth. By J. Wickham Legg, M.D. 197

XV. Cases from Mr. Willett's Wards. By Ernest Colville . 203

Art.		Page
XVI.	On the Percussion of the Lungs and Chest. By J. F. Bullar, M.B.	211
XVII.	Granular Kidney or Intracranial Disease? Two Cases of Headache, Vomiting, Fits, and Double Optic Neuritis, associated with Chronic Ear Disease, but due to Granular Kidney. By Samuel West, M.D.	221
XVIII.	A Case of Primary Malignant Disease of the Lung. By Percy Kidd, M.D.	227
XIX.	The Electrical Department. By W. E. Steavenson, M.B.	235
XX.	On the Treatment of Certain Cases of Delirium with Insomnia. By W. Morrant Baker	249
XXI.	Abnormality of the Colon: a Cause of Unsuccessful Colotomy. By C. B. Lockwood	255
XXII.	A New Scheme for the Classification of Deformed Pelves. By Walter S. A. Griffith	265
XXIII.	Notes on a Case of Pyæmia with Suppurative Pericarditis. By R. D. Brinton, M.B., and R. J. Collyns	271
XXIV.	Cases of Ocular Motor-Paralysis. By W. J. Collins, M.D.	277
XXV.	Notes of a Case of Ruptured Diaphragm. By R. D. Brinton, M.B.	285
XXVI.	From the Department for Diseases of the Larynx. By Henry T. Butlin	289
XXVII.	Fifteen Cases of Retroversion of the Gravid Uterus, with Remarks. By Jamieson B. Hurry, M.B.	297
XXVIII.	Two Cases from Dr. Andrew's Wards. By R. J. Collyns	309
XXIX.	Hydatids of the Liver, with the Passage of Hydatid Membrane. By H. Lewis Jones, M.B.	315
XXX.	On Scarlatinal Dropsy with Little or no Albuminuria. By Dyce Duckworth, M.D.	321
XXXI.	On the Pathology and Treatment of some Forms of Headache. By T. Lauder Brunton, M.D., F.R.S.	329
XXXII.	On a Case of Amyotrophic Lateral Sclerosis, with Microscopical Examination of the Nerve Centres, &c. By R. J. Collyns	343
XXXIII.	Proceedings of the Abernethian Society for Winter Session 1882–83	355
	Descriptive List of Specimens added to the Museum	379
	List of Prizemen	413
	Hospital Staff	416

Index 419

LIST OF ILLUSTRATIONS.

PAGE

PLAN OF ELECTRICAL DEPARTMENT . . . (*to face*) 236

TEMPERATURE CHART . . . . . „ 275

WOODCUTS—

TO ILLUSTRATE MR. SMITH'S PAPER 49

„ „ DR. BRUNTON'S PAPER 332, 335, 338, 339

NOTICE TO SUBSCRIBERS.

It is particularly requested that Subscriptions be remitted without delay, as an acknowledgment of the receipt of the volume. If not paid for before the First day of March 1884, the volume will be charged as a Non-Subscriber's copy.

Post Office Orders to be made payable at the General Post Office to Mr. P. Francis Madden, the Library, Saint Bartholomew's Hospital.

Price to Subscribers, Six Shillings; to Non-Subscribers, Eight Shillings and Sixpence.

December 28, 1883.

LIST OF SUBSCRIBERS.

Abercrombie, Dr. J., 39 Welbeck Street, W.
Adams, Dr., Ashburton, Devon
Adams, Dr., Boston
Adams, Dr. James, Barnes, Surrey
Adams, John, 184 Aldersgate Street, E.C.
Adams, Dr. J. O., Brooke House, Upper Clapton, E.
Ainley, Dr. D., 2 Corporation Street, Halifax
Aldous, G. F., 23 Myddelton Square, E.C.
Allen, Dr. Henry Marcus, 20 Regency Square, Brighton
Anderson, A. R., General Hospital, Nottingham
Anderton, Charles, Leigh, Manchester
Andrew, Dr., 22 Harley Street, W., three copies
Andrews, A., 136 Fenchurch Street, E.C.
Andrews, S., Basingstoke
Archer, John, Carpenter Road, Edgbaston, Birmingham
Armitage, J., 60 Springfield Road, N.W.
Armstrong, Dr. J., Green Street Green, Dartford
Atkinson, T. R., 47 Earl's Court Road, W.

Back, H. H., Hethersett Old Hall, Norfolk
Badley, James P., Dudley, Worcestershire
Bailey, F. C., 30 St. Giles Street, Norwich
Baines, John, 111 Sandpits, Birmingham
Baker, Alfred, 3 Waterloo Street, Birmingham
Baker, S. I., Abingdon, Berks
Baker, W. Morrant, 26 Wimpole Street, W.
Banks, Dr. W. A., Rockland, Maine, United States, America

Barker, Edgar, 21 Hyde Park Street, W.
Barrow, B., Ryde, Isle of Wight
Barton, J. K., 2 Courtfield Road, Gloucester Road, S.W.
Bateman, A., 13 Canonbury Lane, N.
Bateman, F., Whitchurch, near Reading
Bateman, H. E., 47 Great Percy Street, W.C.
Bathe, A. J., Purton, Wilts
Batten, R. D., Library, St. Bartholomew's Hospital
Beattie, H., 37 Albert Square, Stepney, E.
Bazeley, W., 4 Princes Square, Plymouth
Beckett, F. M., St. Audrey's, Ely, Cambridge
Benfield, T. W., Friar Lane, Leicester
Bennett, C. J., 8 Bayshill Villas, Cheltenham
Benton, Samuel, 2 Bennett Street, St. James', S.W.
Berry, James, Library, St. Bartholomew's Hospital.
Berry, Samuel, 4 Cavendish Road, Clapham Park
Bird, Ashley, The Dispensary, Kilburn, N.W.
Birmingham Medical Institute, per W. G. Archer, 4 Waterloo Street, Birmingham
Biss, Dr. C. Y., 65 Harley Street, W.
Blaker, N. P., 29 Old Steyne, Brighton
Bland, Dr. G., Park Green, Macclesfield
Bloxam, John A., 8 George Street, Hanover Square, W.
Blue, Wm. A. S., Strathalbyn, South Australia
Bossy, A. H., 118 Stoke Newington Road, N.
Bostock, E. Ingram., Horsham, Sussex
Bostock, R. A., Library, St. Bartholomew's Hospital
Boswell, Dr. A., Ashbourne, Derbyshire
Bott, H., Brentford, Middlesex
Boulter, H. B., Barnard House, Richmond, Surrey
Bousfield, E. C., Wellesley House, Ashley Road, Bristol
Bowlby, A. A., 75 Warrington Crescent, W.
Brewer, The Messrs., 45 Stow Hill, Newport, Monmouthshire

Bridger, John, Cottenham, Cambridgeshire
Brinton, R. D., Downing College, Cambridge
Bristol Royal Infirmary, per Messrs. James Fawn & Son, Bristol
Brodribb, Francis B., Colne, Lancashire
Brook, Charles, Minster Yard, Lincoln
Brown, George J., 132 Bath Row, Birmingham
Browne, Oswald A., 25 Bernard Street, Russell Square, W.C.
Bruce-Clarke, W., 46 Harley Street, Cavendish Square, W.
Brunton, Dr. T. Lauder, F.R.S., 50 Welbeck Street, W.
Buckle, J., Children's Hospital, Brighton
Bullock, C., Library, St. Bartholomew's Hospital
Burd, Dr., Shrewsbury
Burke, H. W., 19 Meridian Place, Clifton, Bristol
Burn, Dr., Ecclesbourne, Bedford Hill Road, Balham, S.W.
Burnie, W. Gilchrist, Drewton Street, Bedford
Burrows, Sir George, Bart., F.R.S., 18 Cavendish Square, W.
Butler, T. M., Guildford
Butler-Smythe, A. A., 35 Brook Street, W.
Butlin, H. T., 47 Queen Anne Street, W.

Carter, F. H., 7 Bellevue Road, Upper Tooting, S.W.
Cattlin, William, 1 Highbury Place, Islington, N.
Champneys, Dr., 60 Great Cumberland Place, W.
Chapman, H. F., Old Friars, Richmond, Surrey
Chapple, A. D., Library, St. Bartholomew's Hospital
Cheese, James, 31 East Southernhay, Exeter
Chipperfield, T. J. B. P., Bloxham, Banbury, Oxon
Chittenden, T. H., St. Mark's Hospital, London, E.C.
Cholmeley, Dr., 63 Grosvenor Street, W.
Church, Dr., 130 Harley Street, W.

Clark, Alfred, Twickenham, Middlesex
Clarke, Ernest, 21 Lee Terrace, Blackheath
Clarke, W. M., 2 York Buildings, Clifton, Bristol
Clifton Medical Reading Society, per James Fawn & Son, Bristol
Clubbe, W. H., London Road, Lowestoft
Coalbank, I., Teddington
Coates, Dr. G., 18 St. George's Terrace, Gloucester Road, S.W.
Cobbold, Dr. C., Earlswood Asylum, Redhill, Surrey
Cocker, W. Henry, Blackpool
Cockey, Edmund, Frome, Somerset
Coleman, Alfred, Holly Lodge, Streatham, S.W.
Collingridge, Dr. W., 65 Tressillian Road, St. John's, S.E.
Collins, W. C. G., Library, St. Bartholomew's Hospital
Collins, Dr. W. Job, 1 Albert Terrace, Regent's Park, N.W.
Collyns, G. Nelson, Moreton-Hampstead, Devon
Collyns, J. B., Dulverton, Somerset
Cooke, Alfred S., Badbrook House, Stroud, Gloucestershire
Coombs, Dr., Bedford
Cooper, A., 9 Henrietta Street, Cavendish Square, W.
Cope, Ricardo, Bellevue, West Tarring, Worthing
Cornwall, John, Manor House, Meare, near Glastonbury
Corrie, Alfred, Surgeon, R.N., H.M.S. Pembroke, Chatham
Coveney, James H., Thorndyke, Prestwich, Manchester
Cowie, Dr. A. J., Halifax, Nova Scotia
Cowley, J. S., Upton-on-Severn, Worcestershire
Craven, R. M., 14 Albion Street, Hull
Cressey, G. H., Lowestoft, Suffolk
Cripps, E. C., Andover, Hants
Cripps, W. H., 2 Stratford Place, W.
Croft, John, 48 Brook Street, Grosvenor Square, W.

Crompton, Dr. S., Cranleigh, Surrey
Cronk, H. G., Repton, near Burton-on-Trent
Crosse, T. W., 22 St. Giles Street, Norwich
Crowfoot, Dr. W. M., Beccles, Suffolk
Croydon Book Club, per Dr. Lanchester, Croydon
Cruise, Dr. F. R., 93 Merrion Square West, Dublin
Cumberbatch, A. E., 17 Queen Anne Street, W.
Cummings, H. C., Brackley Villa, Thurlow Park Road, West Dulwich, S.E.
Cuthbert, C. F., Mendlesham, Suffolk

Daniel, William J., Beaminster, Dorset
Darbishire, Dr. S. D., 60 High Street, Oxford
Davey, Dr. Alexander G., 9 Belvidere Street, Ryde, Isle of Wight
Davey, Dr. Staines, Hill House, Walmer, Kent
Davis, Arthur, 23 Finsbury Square, E.C.
Davis, Sidney, Training Hospital, Tottenham
Davis, Dr. Sydney, The Sanatorium, Cairo
Davis, Theodore, Devon House, Caterham Valley, Surrey
Davis, Dr. T., Beechcroft, Clevedon
Davison, Dr. R. T., Langton House, Battle, Sussex
Dawson, W. H., St. Helen's, Malvern
Day, Donald D., Norfolk and Norwich Hospital, Norwich
Dayman, Henry, Millbrook, Southampton
Devon and Exeter Hospital Library, per J. Bankart, 19 Southernhay, Exeter
Dingle, W. A., 61 Bunhill Row, Finsbury, E.C.
Dingley, Allen, 7 Argyle Square, King's Cross, W.C.
Dobell, Dr., Streate Place, Bournemouth, Hants
Doran, Alban H. G., 51 Seymour Street, Portman Square, W.
Dowson, Dr. W., Salop Infirmary, Shrewsbury
Drage, Dr., Hatfield, Herts

Duckworth, Dr., 11 Grafton Street, Piccadilly, W.
Duncan, Dr. J. Matthews, 71 Brook Street, Grosvenor Square, W.
Dunn, George, Stevenage, Herts
Dunn, H. P., 14 Hinde Street, Manchester Square, W.
Durham, Arthur E., 82 Brook Street, W.

Earle, E. Septimus, New Brentford, Middlesex
Eccles, George H., Bedford Villa, Bedford Terrace, Plymouth
Eccles, W. Soltau, Church Road, Upper Norwood, S.E.
Edwards, F. S., 93 Wimpole Street, W.
Edwards, H. Nelson, Moreton House, Shrewsbury
Elkington, Thomas, Fenny-Compton, Leamington
Ellis, J. W., Swavesey, Cambridge
Ellis, W. H., Shipley, Leeds
Ellison, Dr. J., 14 High Street, Windsor
Ellison, Samuel Kitching, Adelaide, South Australia, per Simpkin, Marshall, & Co.
Evans, Charles J., Northampton
Evans, Ernest, Hertford
Evans, Herbert N., 3 Thurlow Road, Hampstead, N.W.
Evans, Dr. J. Tasker, Jun., Hertford
Evans, Dr. Nicholl, Cheshunt, Herts
Evans, Thomas, 10 Crockherbtown, Cardiff
Eve, F. S., 7 Welbeck Street, W.
Evershed, Arthur, 10 Mansfield Villas, Hampstead, N.W.

Failes, F. G., Library, St. Bartholomew's Hospital
Fairbank, W., Windsor
Falwasser, Francis, Surgeon-Major, Herbert Hospital, Shooter's Hill, Woolwich
Farmer, W. H. F., 4 Seymour Villas, Anerley, S.E.

Favell, W. F., Brunswick House, Glossop Road, Sheffield
Fenton, Henry, Shrewsbury
Ferguson, G. B., Altidore Villa, Pittville, Cheltenham
Finch, J. E. M., Borough Lunatic Asylum, Humberstone, near Leicester
Firth, Dr. C., 196 Parrock Street, Gravesend
Fish, Dr. J. C., 92 Wimpole Street, W.
Fitzgerald, Dr. Charles E., Folkestone
Flint, Arthur, Westgate Lodge, Westgate-on-Sea
Francis, H. A., 53 Lincoln's Inn Fields, W.C.
Furner, Willoughby, 2 Brunswick Place, Brighton

Gabb, C. B., 3 Castle Place, Hastings
Garrington, William H., 18 St. Andrew's Road, Southsea
Gay, John, 10 Finsbury Place South, E.C.
Gayton, F. C., Cornwall County Asylum, Bodmin
Gee, Dr., 54 Wimpole Street, W.
Gell, H. W., Holly Place, Hampstead, N.W.
Gibbes, Heneage, 94 Gower Street, W.C.
Giffard, D. W., 5 Pavilion Parade, Old Steyne, Brighton
Giffard, H. E., Denham House, Egham, Surrey
Gilbertson, Dr. J. B., 2 Starkie Street, Winckley Square, Preston
Gilbertson, J. H., Mangrove House, Hertford
Gillam, T. H., Bromyard, Worcester
Gimson, Dr. W. G., Witham, Essex
Gipps, A. G. P., care of Messrs. Child & Co., 1 Fleet Street, E.C.
Girdlestone, W. T., Rhyl, North Wales
Glynn, Dr. Thomas R., 62 Rodney Street, Liverpool
Godson, Dr. Clement, 9 Grosvenor Street, W.
Godwin, Dr. A., 28 Brompton Crescent, S.W.
Good, F. T., St. Neot's, Hunts

Goodall, Ralph, Silverdale, Staffordshire
Goodsall, D. H., 17 Devonshire Place, W.
Gorham, R. V., Sans-Souci, Yoxford, Suffolk
Graham, Dr. A. R., Holmwood, Weybridge
Grayling, Dr., Sittingbourne, Kent
Green, F. K., 3 Gay Street, Bath
Grellet, Charles J., Hitchin, Herts
Griffith, Dr. J. W., 50 Camberwell Grove, S.E.
Griffith, Walter, Library, St. Bartholomew's Hospital
Griggs, W. A., Easton Lodge, 11 Tressillian Crescent, St. John's, S.E.
Grime, Henry A., 69 Ainsworth Street, Blackburn
Gripper, Walter, 6 Sumner Place, Onslow Square, W.
Groves, J. W., 90 Holland Road, Kensington, W.
Güterbock, Dr. Paul, Berlin, per Messrs. Lessor & Co., 13 Bridgefield, Manchester

Habershon, S. H., 70 Brook Street, Grosvenor Square, W.
Hall, Dr. B., Library, St. Bartholomew's Hospital
Hall, Dr. de Havilland, 46 Queen Anne Street, W.
Hall, F. A., 4 Albion Street, Lewes
Hallowes, F. B., Redhill, Reigate
Hames, G. H., 2 Queensborough Terrace, Hyde Park, W.
Harle, Ezra, Lakenheath, Suffolk
Harris, Dr., 24 Cavendish Square, W.
Harris, J. D., 45 Southernhay, Exeter
Harris, Samuel, Quorndon, Leicestershire
Harris, Dr. V. D., 39 Wimpole Street, W.
Harris, W. J., 26 Marine Parade, Worthing
Harrison, Dr. A. J., Guthrie Road, Clifton, Bristol
Harrison, Dr. Charles, 30 Newland, Lincoln
Harrison, Reginald, 38 Rodney Street, Liverpool
Hastings, Dr. George, 47 Kensington Park Gardens, W.

Hatfield, W. H., Hambledon, Horndean, Hants
Hawkins, Clement J., Wellington Place, Cheltenham
Haydon, Dr. N. J., Minchinhampton, Stroud, Gloucestershire
Haynes, Dr. F. H., 23 The Parade, Leamington
Head, R. T., Balsham, Cambridge
Head, Dr. Thomas, Cairn House, Warwick Bridge, near Carlisle
Heard, C. G., Hunmanby, Yorkshire
Heath, W. L., 85 Gloucester Road, S.W.
Hemborough, J. W., Waltham, Grimsby
Hensley, Dr. Philip, 4 Henrietta Street, Cavendish Square, W.
Herringham, W. P., 22 Bedford Square, W.C.
Hewer, John H., Sandford House, 33 Highbury New Park, N.
Hewett, Augustus, 1 Cambridge Park Gardens, Twickenham, Middlesex
Hill, Alexander, Botolph House, Cambridge
Hillaby, A., Garton House, Pontefract
Hillier, James T., 4 Chapel Place, Ramsgate
Hind, A. E., Library, St. Bartholomew's Hospital
Hind, Henry, 3 Whitehall Place, Stockton-on-Tees
Hindle, George, Melrose Place, Accrington, Lancashire
Hingeston, William, Lyme Regis, Dorset
Hitchcock, Dr. Charles, Market-Lavington, Wilts
Hockin, G. T., Library, St. Bartholomew's Hospital
Hogg, A. J., Westbourne Villa, Ealing
Holcroft, Henry, Library, St. Bartholomew's Hospital
Holden, Luther, Pinetoft, Rushmere, Ipswich
Hollis, Dr., Park Gate, Preston Road, Brighton
Holmes, T., 18 Great Cumberland Place, Hyde Park, W.
Horsfall, John, Hillary House, Woodhouse Lane, Leeds
Howard, H., Fever Hospital, Stockwell

Howe, J. E., Library, St. Bartholomew's Hospital
Hoyland, S. S., Tower House, Ipswich
Hughes, D. A., Coed-y-Bachan, Dyffryn, Merionethshire
Hughes, D. Watkins, Wymondham, Norfolk
Hughes, J. B., Roe Street House, Macclesfield, Cheshire
Humphry, C. H., Lower Camden, Chislehurst, Kent
Humphry, F. A., 25 Marine Parade, Brighton
Humphry, L., 26 Princes Square, Bayswater, W.
Hunt, B., Library, St. Bartholomew's Hospital
Hunter, R. H., Isleworth, W.
Hurry, J. B., Library, St. Bartholomew's Hospital
Husband, Dr. Henry A., 27 Chalmers Street, Edinburgh
Husband, W. E., Library, St. Bartholomew's Hospital
Hussey, E. L., 8 St. Aldate's, Oxford
Hutchinson, J., 15 Cavendish Square, W.
Hutton, E. R., 18 West Green Road, Tottenham

Iliffe, W., 41 Osmaston Street, Derby
Ilott, Edward, 26 Tweedie Road, Bromley, Kent
Ilott, Dr. Herbert J., 56 High Street, Bromley, Kent

Jackman, T. S. H., 11 Stoke Newington Road, N.
Jackson, Arthur, Wilkinson Street, Sheffield
Jacob, A. H., 9 Dalhousie Square, Calcutta
Jalland, R., Horncastle
James, Edwin M., 122 Collins Street, Melbourne
Jenkins, Dr. E. J., Douglas Park, Sydney, Australia
Jessop, W. H., 73 Harley Street, W.
John, D., 2 Russell Street, Swansea
Jolliffe, W. J., Yofford House, Isle of Wight
Jones, H. Lewis, Library, St. Bartholomew's Hospital
Jones, Morris, Aberystwyth, Cardiganshire
Jones, Dr. R., Colney Hatch Asylum, N.

Jones, R. Owen, Bala, Merionethshire
Jowers, Frederick W., 27 Old Steyne, Brighton

Kay, W., Bentley Cottage, Bentley, near Farnham, Hants
Keetley, C. R. B., 20 Princes Street, Hanover Square, W.
Kendall, T. M., Library, St. Bartholomew's Hospital
Kesteven, Dr., 401 Holloway Road, N.
Kidd, Dr. P., 60 Brook Street, W.
King, Dr. D. A., 26 Harley Street, W.
Kingdon, J. A., 2 Bank Buildings, E.C.
Kinneir, F. W. E., Sherborne, Dorset
Kinsey, R. H., 2 Harpur Place, Bedford
Knight, H. J., Rotherham, Yorkshire

Lanceraux, Dr., 19 Rue de la Paix, Paris
Lanchester, Dr. H. T., Park House, Park Lane, Croydon
Langdon, J. W., Winckley Square, Preston, Lancashire
Langdon, Thomas C., Northgate House, Winchester
Langton, John, 2 Harley Street, W.
Latham, Dr. P. W., 17 Trumpington Street, Cambridge
Laurence, L. A., 37 Belsize Avenue, N.W.
Lawrence, H. Cripps, 49 Oxford Terrace, Hyde Park, W.
Lawrie, O., Kornthal, Sidcup, Kent
Leaver, C. B., 24 Horbury Crescent, Bayswater, W.
Lee, John, Ashbourne, Derbyshire
Leeds School of Medicine, per Thomas Scattergood, 41 Park Square, Leeds
Lediard, Dr. H. A., 78 Lowther Street, Carlisle
Legg, Dr. Wickham, 47 Green Street, Park Lane, W.
Leppington, H. M., Great Grimsby, Lincolnshire
Leverton, H. Spry, Truro, Cornwall
Lewis, H. K., Medical Library, 136 Gower Street, W.C., nine copies
Library of St. Bartholomew's Hospital

Little, T. S., 106 London Street, Reading
Lock, J. G., Lansdowne House, Tenby, South Wales
Lockwood, C. B., 8 Serjeant's Inn, Fleet Street, E.C.
Longhurst, Arthur E. T., 22 Wilton Street, S.W.
Lowe, C. W., Powis Lodge, Vicarage Park, Plumstead, S.E.
Lowe, George, Burton-on-Trent
Lowne, B. T., 65 Cambridge Gardens, Notting Hill, W.
Lupton, Harry, The Old Vicarage, Stratford-on-Avon
Lyons, Isidor I., 19 Queen Anne Street, W.

McKay, Dr. W. W., Bois City, United States of America
Mackenzie, Dr. J., Ingleby, Hillmorton Road, Rugby
Mackenzie, Dr. Morell, 19 Harley Street, W.
Mackinder, Dr., Gainsborough
Maconchy, Dr. John K., Infirmary, Downpatrick
Macready, J., 125 Harley Street, W.
Manchester Royal Infirmary, the Secretary, Manchester
Manning, Joseph, Wye, Ashford, Kent
Mark, Leonard P., Halidon, Upper Beulah Hill, Upper Norwood, S.E.
Marsh, Howard, 36 Bruton Street, Berkeley Square, W.
Marsh, Dr. N. P., 44 Bedford Street, Liverpool
Martin, Dr., 51 Queen Anne Street, W.
Martin, P., Abingdon, Berks
Mason, J., Windermere
Maude, B., Children's Hospital, Shadwell
May, Dr. E. Hooper, Tottenham High Cross, Middlesex
Meade, R. H., Bradford, Yorkshire
Menzies, J. L., 1 Gwendwr Road, West Kensington, W.
Metcalfe, E., 55 Clifton Gardens, Maida Vale, W.
Mills, J., 15 Henrietta Street, Cavendish Square, W.
Milner, E., 32 New Cavendish Street, Portland Place, W.

Milsome, Dr. J. R., Addlestone, Chertsey
Mitchinson, Dr., Lindum Holme, Lincoln
Moore, E., Lifford House, Dartford
Moore, Dr. Norman, The College, St. Bartholomew's Hospital
Morris, C. A., Library, St. Bartholomew's Hospital
Morris, Edward, 1 Princess Place, Plymouth
Moullin, C. W. M., 69 Wimpole Street, W.
Mudge, T. H. T., Blagdon, Paignton, Devon
Muriel, C. J., 71 St. Giles' Street, Norwich
Murrell, W. H. J., Sefton House, Kent Road, Southsea

Nance, H. Chester, Eccleshall, Staffordshire
Neatby, Dr. T., 29 Thurlow Road, Hampstead, N.W.
Nettle, W., Liskeard, Cornwall
Newman, Dr. A., 70 Macklin Street, Derby
Newman, Dr. W., Barn Hill House, Stamford
Newstead, J., 9 York Place, Clifton, Bristol
Newton, C. J., Oriel Lodge, Cheltenham
Newton, Edward, 85 Gloucester Terrace, Hyde Park, W.
Newton, Lancelot, Alconbury Hill, Hunts
Nicholson, John F., Harefield, Uxbridge, Middlesex
Nunn, P. W. G., Bournemouth

Odell, Thomas, Hertford
Odling, T. F., per Hickey & Borman, 14 Waterloo Place, S.W.
O'Grady, E. S., 105 Stephen's Green South, Dublin
Oldman, John, Huntingdon
Ormerod, Dr., 25 Upper Wimpole Street, W.
Orton, G. H., 30 Lower Phillimore Place, Kensington, W.
Owen, Professor, F.R.S., Sheen Lodge, Richmond Park

Paget, Dr., F.R.S., Cambridge

Paget, Sir James, Bart., F.R.S., 1 Harewood Place, Hanover Square, W.
Palmer, C., 44 King's Street, Great Yarmouth
Pardington, Dr. G. L., The Spa, Tunbridge Wells
Parke, J. Latimer, Tideswell, Derby
Parker, G. R., 11 King Street, Lancaster
Parker, R. W., 8 Old Cavendish Street, W.
Parnell, G. C., St. Norman's, London Road, Forest Hill, S.E.
Paulley, Legge, King's Langley, Herts
Peacey, William, 214 Lewisham High Road, S.E.
Pearse, William, St. Tudye, Bodmin
Penfold, H., 7 Brunswick Place, Brighton
Pettifer, E. H., 50 Southgate Road, N.
Pollard, William, Torquay
Portman Book Club, per Edmund Owen, 49 Seymour Street, Portman Square, W.
Powdrell, John, 160 Euston Road, N.W.
Power, Henry, 37a Great Cumberland Place, W.
Pratt, F. T., Marine Parade, Appledore, North Devon
Prentis, Charles, Esq., 11 Upper Phillimore Place, Kensington, W.
Preston, A. Chevalier, Swaffham Prior, Cambridgeshire
Prichard, Augustin, 4 Chesterfield Place, Clifton
Prickett, Dr. Marmaduke, 12 Devonport Street, Gloucester Square, W.
Prideaux, T. E. P., Sutherland House, Wellington, Somerset
Prothero, J., St. Winifred's, Kingston-on-Thames
Pugh, J. L. P., Brighouse, Normanton
Pullin, B. G., Sidmouth, Devon
Pye, W., 4 Sackville Street, Piccadilly, W.
Pyne, Richard, Royston, Cambridgeshire

Quennell, John C., Brentwood, Essex
Quick, James R., 96 East Street, Penzance

Radford, The Library, St. Mary's Hospital, Manchester, per Librarian
Ramsay, Dr. James, 23 High Petergate, York
Ranking, Dr. J. E., 18 Mount Ephraim Road, Tunbridge Wells
Raven, Thomas Francis, Barfield House, Broadstairs
Ray, W. B., The Dispensary, Stoke Newington, N.
Rayner, H., Library, St. Bartholomew's Hospital
Read, Mabyn, M.B., The Hospital for Sick Children, Great Ormond Street, W.C.
Rees, Albert B., 12 Bellevue Street, Swansea
Reid, James, 12 Lower Bridge Street, Canterbury, two copies
Reynolds, Dr. Russell, 38 Grosvenor Street, W.
Rice, Edward, Harbury, near Leamington
Richards, Dr. Owen, Vrouheulog, Corwen, Merionethshire
Richmond Hospital Library, per Dr. Gordon, 13 Hume Street, Dublin
Richmond, W. Stephenson, Library, St. Bartholomew's Hospital, E.C.
Rigden, G. C., Lewes
Risk, E. J., St. Andrew's Chapelry, Plymouth
Roberts, Arthur, Keighley, Yorkshire
Robinson, Haynes, St. Giles' Place, Norwich
Robinson, G., Harpur Place, Bedford
Rogers, T. L., Rainhill, Prescott
Roughton, Dr. E. W., Brook Green, W.
Royds, W. A. S., 32 London Street, Reading
Rumbold, C. F., Lowborne House, Melksham, Wilts
Rundle, H., Warflete, Clarence Parade, Southsea
Rushworth, Norman, Beechfield, Walton-on-Thames
Rust, H. R. G., Wethersfield, Braintree

Salmon, Dr. A. G., Westfield, Chedzoy, Bridgewater, Somerset

Sargent, D. W., 364 Brixton Road, S.E.

Saul, Dr. W. Wingate, Lancaster

Saunders, E. D., Tenterden, Kent

Savory, Dr. C. T., 1 Douglas Road, Canonbury, N.

Savory, W. S., F.R.S., 66 Brook Street, W.

Sayer, C. W., Enville House, White Ladies' Road, Clifton, Gloucestershire

Schollick, T. J., 13 Haydon Place, Guildford

Scott, J., Library, St. Bartholomew's Hospital

Sharman, Malin, 18 Newhall Street, Birmingham

Sharpin, E. C., Bedford

Shaw, Josephus, 24 Plough Road, Rotherhithe

Shaw, Dr. T. Claye, Middlesex County Lunatic Asylum, Banstead Downs, Sutton

Shears, C. H. B., Eye and Ear Infirmary, Myrtle Street, Liverpool

Sheehy, Dr., 4 Claremont Square, N.

Shelly, Dr. C. E., Hertford

Shepard, W. L., 15 Euston Road, N.W.

Shoolbred, W. A., The Castle House, Chepstow

Short, Dr. T. W. Uplands, Woolston, Southampton

Simmons, H. C., 79 Castleton Road, Tufnell Park, N.

Simpson, S. H., Romsey, Hants

Skeate, Edwin, 16 The Paragon, Bath

Slater, Dr. D. J., Library, St. Bartholomew's Hospital

Smith, H. S., 80 Tollington Park, N.

Smith, Dr. T. Gilbart, 68 Harley Street, W.

Smith, Dr. Robert, 15 Imperial Square, Cheltenham

Smith, Thomas, 5 Stratford Place, Oxford Street, W.

Soame, C. B. H., Dawley, Salop

Southecombe, A. G., Library, St. Bartholomew's Hospital

Southey, Dr., 32 Grosvenor Road, Westminster, S.W.
Spackman, H. R., Penn Fields, Wolverhampton
Spicer, W. T. H., Library, St. Bartholomew's Hospital
Square, W. J., 22 Portland Square, Plymouth
Stamford Infirmary, Medical Book Society, Stamford
St. Bartholomew's Hospital, The Governors of, thirty copies
Steavenson, W. E., 15 Henrietta Street, Cavendish Square, W.
Steedman, T. F., High Exall Hall, Wallington, Shropshire
Steele, H. F., Stoke Ferry, Brandon, Norfolk
Stephen, Guy N., Library, St. Bartholomew's Hospital
Stevens, Dr. A. Felix, 13 High Street, Stoke Newington, N.
Stevenson, N., 51 Wimpole Street, W.
Stoney, P. Butler, Holborn Hill, Cumberland
Storrs, Robert, Hallgate, Doncaster
Stowers, Dr. James H., 23 Finsbury Circus, E.C.
Stretton, Samuel, Kidderminster
Stretton, Dr. W. H., 8 Suffolk Place, Pall-Mall East, S.W.
Strugnell, F. W., 45 Highgate Road, N.
Strugnell, W. T., Library, St. Bartholomew's Hospital
Stubbs, P. B. F., Library, St. Bartholomew's Hospital
Styan, T. G., 22 Eastbourne Terrace, Praed Street, W.
Swales, Peter, Alexandra Terrace, Sheerness
Sykes, M. Carrington, Beckett Hospital, Barnsley
Sylvester, K. F., Trowbridge, Wilts
Symons, Henry E., Library, St. Bartholomew's Hospital
Sympson, Thomas, 3 James Street, Lincoln

Tait, E. W., 54 Highbury Park, N.
Tait, H. B., 54 Highbury Park, N.
Tayler, G. C., Trowbridge, Wilts

Taylor, Herbert, 180 Kennington Park Road, S.E.
Taylor, Thomas, Sutton Coldfield, Warwickshire
Terry, George, Mells, Frome
Thomas, W. Duncan, Llanelly, Carmarthen
Thompson, Charles R., Westerham, Kent
Thorne, Dr. R. Thorne, 45 Inverness Terrace, Kensington Gardens, W.
Thurland, F. E., 1 Wilmington Square, W.C.
Tobin, George, 22 Halliwell Street, Chorley
Tooth, H. H., 34 Harley Street, W.
Townsend, K., 168 Lewisham High Road, S.E.
Trinder, A. P., Library, St. Bartholomew's Hospital
Trollope, Dr., 9 Maze Hill, St. Leonards-on-Sea
Tuckwell, Dr., 64 High Street, Oxford
Turner, Professor, Edinburgh
Turner, F. H., High Street, High Wycombe, Bucks
Turner, John, High Wycombe, Bucks
Twining, Edward, Walthamstow, Essex
Tylecote, Dr. E. T., Great Haywood, Staffordshire
Tyrer, Robert, Rainhill, Lancashire

Upton, A., Rio Lodge, Brighton
Upton, H. C., 28 Medina Villas, Hove, Brighton

Vaughan, William E. W., Crewe Cottage, Crewe
Vernon, Bowater J., 14 Clarges Street, Piccadilly, W
Verrall, T. J., 95 Western Road, Brighton

Walker, E. G. A., Church Street, Reigate, Surrey
Walker, Dr. J. West, Spilsby, Lincolnshire
Wallis, F. C., Library, St. Bartholomew's Hospital
Wallis, G., Corpus Buildings, Cambridge
Walsham, Hugh, 426 Camden Road, N.

Walsham, W. J., 27 Weymouth Street, Portland Place, W.
Warwick, Dr. R. Archer, Barnard House, Richmond
Waylen, George, Longcroft House, Devizes
Wayman, C. P. S., Foulsham, East Dereham, Norfolk
Webb, H. S., Welwyn, Herts
Webber, E. S., Library, St. Bartholomew's Hospital, E.C.
Weiss, H. F., 30A George Street, Hanover Square, W.
West, Dr. Samuel, 15 Wimpole Street, W.
West, Dr. W. C., Yarnton Lodge, Great Malvern
Wharry, Dr. C. J., Park Place, Old Charlton, Kent
Wharry, Dr. R., 6 Gordon Square, W.C.
White, W. H., Carolgate, Retford, Notts
Whitehead, H. E., Library, St. Bartholomew's Hospital
Whitling, Henry T., High Street, Croydon
Whitmore, W. Tickle, 7 Arlington Street, S.W.
Wilkins, H. G. G., The Green, Ealing
Wilks, Dr. George, Ashford, Kent
Willett, A., 36 Wimpole Street, W.
Willett, C. V., 9A Oxford and Cambridge Mansions, Edgware Road, W.
Willett, E. W., Arnold House, Brighton
William, J. Brynmeurig, Bethesda, Bangor
Williams, Charles, Sebonig Dyffryn, Merioneth
Williams, Dr. Edward, Holt Street House, Wrexham
Williams, E. R., Stanley Hospital, Liverpool
Williams, J. T., Rossall House, Barrow-in-Furness, Lancashire
Williams, Dr. Wynn, 1 Montague Square, W.
Wilson, Sir Erasmus, 17 Henrietta Street, W.
Winkfield, Alfred, Beaumont Street, Oxford
Womack, F., 68 Abbey Road, St. John's Wood, N.W.
Wood, Frederick, 12 Lewes Crescent, Brighton
Woods, G. A., 57 Houghton Street, Southport, Lancashire

Woodward, F. E., General Infirmary, Chester
Worship, J. L., Riverhead, Sevenoaks
Wright, F. M., Library, St. Bartholomew's Hospital
Wright, Thomas G., Stilton, Hants
Wyer, Dr. Otho, The Avenue Road, Leamington

Yarrow, Dr. G. E., 87 Old Street, E.C.
York Medical Book Society, per Fred. Shann, 71 Micklegate, York
Young, Adam, 14 High Street, Sevenoaks, Kent

The Subscription List in each year will be closed on the First of October.

JAMES SHUTER.

BY

LUTHER HOLDEN.

THE morning of the 1st November brought the sad news of the unexpected death of our recently appointed Assistant-Surgeon, JAMES SHUTER. What added to the general sorrow was the report that so useful a life had been ended by a poisonous dose of morphia taken by mistake. The report proved too true. But how came this grievous mistake to happen? It appears that he had been at times troubled with uneasiness almost amounting to pain in his right hip, which he attributed to a fall when at Brussels about three years ago. The precise nature of the injury was obscure. It certainly made him disinclined to take active exercise, and was in a measure detrimental to his general health. The following extract from a letter sent by him to the writer of this memoir only a few hours before his death explains under what circumstances the mistake occurred. He says: "I am laid up with rather a heavy cold, which has affected my hip in such a way that I consider it 'sciatica.' I am just going to give myself a morphia injection over the 'great trochanter.'" With this intention he had procured from a chemist a solution of morphia. In the endeavour to pull out the cork, he broke the neck of the bottle; and failing to find another bottle, he poured the solution into a glass, which he placed on the dressing-table. That he gave himself the injection seems clear from the blood-stain which was found on his linen, and the syringe laid aside. Before composing himself for the night, he appears to have remembered that he had to take

for his cold a saline mixture, which stood already poured out in another glass on the same table. Reaching from his bed to the table, he must have taken up the wrong glass, and drank the whole ounce of the morphia solution. The glass containing the saline draught was found untouched, covered by a piece of paper.

He had retired early to his bedroom, having previously told his sister that he was going to give himself the injection. Three-quarters of an hour later, his sister went into his room to see if her brother were asleep. Being alarmed by the unnatural manner of his breathing, she sent for Mr. Kesteven, a surgeon close at hand, who said at once that he was strongly under the influence of a narcotic poison. When one of his colleagues, Dr. Samuel West, who had also been summoned, arrived, he found him profoundly comatose, with pupils widely dilated, "showing a late and dangerous stage of morphia poisoning." Artificial respiration was kept up for many hours by two of his old pupils, Mr. Fletcher and Mr. Dodd, who happened to call about the time. There was once or twice a ray of hope before it became plain that all efforts were hopeless. He passed away, in a state of the deepest insensibility, seven hours after his sister entered his room.

On the day of his funeral the Hospital lectures were suspended. The service was read by his old college tutor and friend Archdeacon Emery, and his body was followed to the grave by nearly all the members of the staffs of St. Bartholomew's and the Royal Free Hospitals, to both of which he was attached, as well as by a large number of the students, anxious to show their respect and affection for his memory and their tender sympathy with his family.

Short as his life was, there is enough in it to justify the general wish that one of us should perpetuate in the annals of St. Bartholomew's the name and character of our junior colleague, thus cut off by an appalling misadventure in the midst of a bright career. Though only thirty-seven years old, he had already earned his title to rank as one of the ablest and most promising of the Assistant-Surgeons of the London hospitals. Had his life and health been spared, there can be little doubt

that he would in due time have risen to the highest rank in his profession.

Those who remember SHUTER in his boyhood speak of his intense fondness for Nature and natural history, and of the pride he used to take in his collection of moths, butterflies, and birds' eggs. This love of natural knowledge he probably inherited from his father, who is himself also a keen votary of science. It increased as he grew up, and determined his choice of the medical profession as most congenial to his tastes.

Herein he carried out the maxim "Whatever you are by nature, keep to it. Never desert your own line of talent. Be what Nature intended you for, and you will succeed: be anything else, and you will be ten thousand times worse than nothing."

Part of his early childhood was spent in France, where his family then lived; to this he owed his great proficiency in the French language, which was of so much service to him in after life. He was indeed so good a French scholar, and spoke it so well, that it is said a French lady with whom he was conversing had great difficulty in believing he was merely an English youth on his travels. At the age of twelve he was sent to the Thanet Collegiate School at Margate, where he remained four years. Here he seems to have shown a good memory, aptness for learning, and to have been popular alike with masters and boys. He is described by one of his schoolfellows as having been "sound rather than brilliant, and as having taken his full share in all the school games." He left school with a first-class certificate from the College of Preceptors and with honours in several subjects. At sixteen he attended lectures at King's College School, where he took the first prize for mathematics in the Lent term, 1862, and for French in the Easter term of the same year.

In 1864, having already matriculated at the University of London, he entered at Corpus Christi College, Cambridge, his tutors being Dr. Perowne, the present Master, and Dr. Emery, now Archdeacon of Ely. In a letter to the writer the Archdeacon says: "All who had to do with him in college have pleasant remembrances of his geniality and frankness. . . . His fine face and youthful pure look as an undergraduate I well remember, as well as his free confiding manner and readiness to

obey. . . . He was a man whose powers steadily developed, and whose simple and high character and aim, joined to a cheerful disposition and fine generous feeling, gave promise of continual advancement in the respect and affection of all who might be privileged to be brought in contact with him, or share his friendship or acquaintance."

He took his B.A. degree with mathematical honours in 1868. During this year also he studied law, and took the degree of LL.B. For the next two years we find him a student at Addenbrooke's Hospital, Cambridge, under Dr. Humphry; and in 1870 he formally began his work at St. Bartholomew's. Here he for the first time came under the immediate knowledge of the writer, who remembers him as a great worker at chemistry (in the laboratory of the late Dr. Mathiesen), at botany, and physics generally, for which he showed great natural aptitude. Indeed, if he had had leisure or occasion to devote himself exclusively to those subjects, he might have risen to eminence in any of them.

After working as a clinical clerk in the medical wards and a dresser in the surgical, he took his M.R.C.S. in 1874, and was then nominated to the post of House-Surgeon by Mr. Holden. Having held this post for twelve months, he was appointed House-Physician under the late Dr. Black.

It is right to mention that the House-Surgeons' Prize was awarded to him, a prize of £10, founded in 1857[1] by the late treasurer, Mr. Bentley, "to be given to the House-Surgeon whose kind conduct and attention to the patients have been most exemplary during the preceding year." In 1875 he took his M.A. and M.B. at Cambridge, and in 1876 he obtained the Fellowship of the College of Surgeons, having previously spent some months at Paris in the study of operative surgery.

After such a liberal education and such various preparatory studies, the House-Surgeoncy of a great hospital was just the post to give scope to the best parts of SHUTER'S natural and acquired powers. And so it proved. Among the many House-

[1] At that time there were no House-Physicians, as now. These were first appointed in 1868, on the resignation of Mr. Wood, the apothecary, who had charge of the Physicians' Wards and casualty patients.

Surgeons with whom the writer has had the happiness to work, SHUTER was certainly one of the very best. Entire confidence might be placed in his judgment. One felt that he was equal to any emergency, and that he would always do the right thing. Hospital surgeons know well the comfort of this feeling, which relieves them of half their anxiety. He was scarcely ever absent from the wards, and was strictly methodical in his work. His dressers tell of his able teaching of "minor" as of "major" surgery, of the conscientious stress which he laid upon the most minute details, more especially those tending to the comfort and well-doing of his patients. A lesson still more valuable he taught by example—the lesson of gentleness and respect in his manner to his patients. It is said of him that no one in the Hospital is able to recall a single hasty or impatient word, however perverse or unreasonable the patient might be. His forbearance was indeed wonderful. One of his pupils, speaking to this point, tells of "an old Irishwoman, nervous and delicate, who had an insane terror about knives. SHUTER had rather hastily pledged himself to avoid them in her case. It cost him no end of trouble and ingenuity to attain the desired result by other means, but he kept his word."

Having completed his term as House-Surgeon and House-Physician, his next step was to establish himself as a consulting surgeon in New Broad Street. Here he laid the foundation of a practice which steadily increased up to the date of his death. But his main object was not to practise merely, but to become attached to the staff of some great metropolitan hospital, and be a teacher in its school. And he had not long to wait. In 1878 he was appointed an Assistant-Demonstrator of Anatomy and Demonstrator of Physiology in the school of St. Bartholomew's; and immediately afterwards he became Assistant-Surgeon to the Royal Free Hospital. In 1882, being then thirty-six years old, he was elected Assistant-Surgeon to St. Bartholomew's, an appointment on which he had set his heart; and soon afterwards he was elected Examiner for the second M.B. at Cambridge.

And now, how did Shuter acquit himself as a formal teacher? This question shall be answered by one of his best pupils, fully

competent to judge, who says: "I have always had a very high opinion of him as a teacher, but not as a crammer." Shuter took little interest in 'exam' knowledge. His chief aim was to teach students honestly the broad points of their work, and leave them to improve afterwards, as far as their time and powers went, the good ground he had laid for them. Above all, he was sound as a teacher. He truly loved his work, most of all, perhaps, anatomy, osteology and surgery." Some of his pupils have said that he was not a rapid teacher. Be this as it may, all agree that he was earnest, painstaking, trustworthy, and that he would never even leave a dull man until he had got the matter well into his head. For he had the rare quality of being a patient teacher—that is, he was patient of slowness, and could make allowance for the unequal powers of attention possessed by different learners. To men of slow perception he was singularly kind, and would be tutor, friend—in a word, everything to them. A dry teacher he certainly was not. His well-stored mind, his fund of anecdote, and clever pencil, enabled him to bring much useful collateral knowledge to bear upon the matter in hand, and he never lost an opportunity of pointing out its immediate application to surgery.

Much as SHUTER disliked mere 'exam.' knowledge, he nevertheless had many private pupils, and had unquestionably a happy knack of getting them through their examinations. Thus he gained the credit of being a successful 'coach,' and this not only for the ordinary pass, but for the higher examinations. More than this, he made a point of advising men to 'go in' for these higher examinations whenever he thought they had a fair chance of success. Many a man has to thank Shuter for his Fellowship, taken solely in response to his advice and help. Not a few have been persuaded to take a Cambridge degree; and in cases of deficient means, it is within the writer's knowledge that his generous nature was not slow to supply them.

SHUTER was fond of operative surgery, and had ample opportunities of operating at the Royal Free Hospital, where, in addition to out-patients, he had eight or nine beds at his disposal. The writer can testify from personal observation that he operated well. He kept himself well abreast of the most

advanced surgery of the day, and would not shrink from any justifiable operation, however grave. He considered well beforehand all contingencies. He was always cautious, and his great familiarity with anatomy kept him well within the lines of safety. He was scrupulously careful in the dressing of the wound, was very loth to bring parts together before all bleeding had ceased, and was a true disciple of antiseptic surgery.

One of his colleagues at the Royal Free Hospital, himself a master in operations, says of SHUTER that he was "one of the most steady, cool, and thorough operators I ever saw; and I cannot tell you how much I appreciated his skilful yet unobtrusive assistance at many big operations. I could always rely upon him to do the right thing at the right time."

SHUTER had the *tactus eruditus* of a surgeon, and was seldom wrong in his diagnosis. He gave a signal proof of this in an interesting case which fell under his care in the year 1881 in the Royal Free Hospital. For the following details of it the writer is indebted to one of the lady students who nursed the patient:—"A labourer, aged 18, was admitted, with the history of a chill and acute rheumatism of the left hip-joint, which was swollen and painful. There was great œdema of the thigh and enlargement of the shaft of the femur, with pain on deep pressure. An incision down to the bone showed no pus. The patient became rapidly worse and extremely emaciated. Mr. SHUTER pronounced it to be a case of acute necrosis of the shaft of the femur without suppuration, and removed the entire limb. The circulation was controlled by pressure on the common iliac through the rectum. Amputation was done in the upper third of the thigh without flaps. The rest of the femur was then removed by a vertical incision, leaving the periosteum where possible. The cavity of the hip-joint was found full of pus. The shaft of the bone was necrosed along its entire length, but there was no suppuration in its course. The patient did uninterruptedly well. Three months after the operation there was a firm and freely moveable stump with evidence of new bone. This bone was sufficient to enable the patient to wear an artificial limb for a time; but he was obliged to leave it off on account of its weight."

This mode of amputating at the hip is novel, and SHUTER has the credit of having been one of the first to adopt it in England. The case was fully brought by him under the notice of the Clinical Society, and is recorded in its Transactions.

A memoir of SHUTER would be incomplete without some mention of his duties at the Royal Free Hospital, other than those relating to the patients. It was part of his engagement to teach the lady students who come to this Hospital from their medical school to learn the practical work of their profession. Not that he was there as a systematic lecturer. His business was to give them a short yearly course of demonstrations on "minor" surgery. He did this without in any degree advocating or otherwise the question of the medical education of women. Whatever may have been his private opinion on this point, he did the duty he had undertaken conscientiously. As the lady students at that Hospital are to all intents and purposes intrusted with the work of dressers and clinical clerks, they are entitled to adequate instruction as such. SHUTER always spoke of them in high terms, as punctual in their attendance, intelligent and anxious to learn. He never hesitated to commit important cases to their care. He relied upon their constant watchfulness, and had entire confidence in their carrying out his instructions. They, on the other hand, thoroughly appreciated the pains he took to teach them. One of them, speaking for the rest, tells of "his untiring patience, his constant endeavour to approach his subject from the student's point of view, no time or trouble being too great to spend on the clearing up of difficulties; and his quiet, kindly manner was sufficient to set the most nervous beginner at her ease."

Some men learn chiefly by observation, others from books. SHUTER was not a great reader, but he certainly was a keen observer, an active and fertile thinker. He was always busily at work for somebody, and seemed to have no time for reading. Though an only son, and subjected to the risk of being a spoilt child, he was yet of a most unselfish nature. It may truly be said that his first care was his patient, his second his profession, his last himself. He was a pure-minded man, of gentle temper,

and eminently a peacemaker. All this was expressed in his fine ingenuous face. He had a fair complexion, a full blue eye with dark eyelashes, and a brown beard. Tall and substantially built, he was by no means wanting in presence. In general conversation he was cheerful, ready, fluent, and well informed on the leading topics of the day. One was sure to gain some information in his company. Every one liked him; so he made a host of friends—not a single enemy.

The writer of this memoir cannot close it without expressing the grateful remembrance which he will always retain of the valuable help given to him in re-editing his works by the accurate and comprehensive knowledge of comparative anatomy and physiology possessed by his friend JAMES SHUTER.

Quis desiderio sit pudor aut modus
Tam cari capitis?

SAINT BARTHOLOMEW'S HOSPITAL REPORTS.

AN ANECDOTE OF SYDENHAM.

BY

SAMUEL GEE, M.D.

The life of Sydenham has not yet been written in a manner worthy of his fair fame. I am apt to think that we might know much more about him were some one, with zeal enough and time enough, to make a steady search among the records, printed and unprinted, of Sydenham's day. As an earnest of what we might look for, I publish the following petition. From the original,[1] lying in the Public Record Office, a copy was taken by Mrs. Everitt Green, and was given to me by Mr. George F. Sydenham, lately one of my clinical clerks. The document proves—

1. That Thomas Sydenham was a captain in the army of the Parliament; a fact which has been doubtful hitherto. For instance, Dr. R. G. Latham says:[2] "That he left Oxford very soon after his entrance, is certain. It is also nearly certain that he left it for military service, and that on the side of the Parliamentarians. Here, however, there are elements of doubt: first, as to the extent to which Sydenham served as a Parliamentarian soldier; secondly, as to the fact of his having served at all."

[1] Petitions and Reports to the Protector, vol. xii. p. 797.

[2] Life of Sydenham, prefixed to translation of Works, vol. i. p. xvi. London, 1848.

2. That in the course of his faithful services in the army, he lost much blood and much disabled his body.

3. That two of his brothers were slain in the civil wars, namely, John, slain in Scotland, and Francis, slain in the West—both being majors. Only two of Sydenham's brothers have been identified hitherto, namely, Colonel William Sydenham and Major Francis Sydenham. Major Francis was killed in 1644. The third brother of Captain Thomas, that is to say, Major John Sydenham, is now, I believe, identified for the first time.[1]

Cromwell was installed Protector on December 16, 1653. Colonel William Sydenham had taken an active part in the overthrow of the Little Parliament on the 12th of the same month, and he was afterwards chosen to be one of the fifteen members of that council which is mentioned in the postscript to the petition; so that maybe Captain Thomas thought that a likely time had come for his petition to be heard. To that same council Milton was Latin secretary; the first of his published letters, written in the name of the Protector Oliver, bears date June 27, 1654. In this year (1654) Milton printed the "Defensio Secunda pro Populo Anglicano," which, in the noble panegyric upon Cromwell and exhortation to the English people at the end, contains the following passage: "Addam et nonnullos, quos togâ celebres et pacis artibus, consiliarios tibi advocasti, vel amicitiâ vel famâ mihi cognitos; Huitlochium, Picheringum, Striclandium, Sidnamum, atq; Sidneium."[2] So that William Sydenham was well known to Milton; whether Thomas Sydenham also was, who shall say? The poet being gouty, and the physician too, they may have been friends in affliction at least.

I think that it has not been remarked that the date of Sydenham's starting in practice seems to be nearly fixed by a passage in one of his treatises: "Equidem probè memini (cùm tunc primùm ad Hydropem curandum invitarer) me annis adhinc 27 aut circiter ad Matronam quandam piam & honestam, nomine Saltmarsh, Westmonasterii commorantem, fuisse accersitum."[3] Subtracting 27 from 1683 leaves 1656 as the year wherein Sydenham first treated a case of ascites.

Here follows the copy of the petition:—

[1] Latham's Life, p. xiv.

[2] "And I will add some whom thou hast summoned to be thy councillors, men famous for political wisdom and the arts of peace, and who are known to me by friendship or repute; Whitlocke, Pickering, Strickland, Sydenham, and Sidney."

[3] Tractatus de Podagra et Hydrope. Londini, 1683, p. 148. I quote from a copy of the first edition which belongs to Dr. Robert Bridges. "I well remember (for it was the first time I was called upon to treat a dropsy) having been summoned, twenty-seven years ago or thereabouts, to a worthy married woman, named Saltmarsh, dwelling at Westminster."

To his Highness the Lord Protector of England, Scotland, and Ireland, &c.

THE HUMBLE PETITION OF CAPT. THOMAS SYDENHAM,

Sheweth,—

That there was due to my brother, Major John Sydenham slain in Scotland, a very considerable arrear for sundry and constant services in England and Ireland. That your Highness' petitioner, besides that he was legally entitled to the said arrears, did furnish his said brother with divers sums of money to enable him to buy horses and other necessaries for his going into Scotland, for which your Petr. was never satisfied.

That the several papers which should certify the afore-mentioned services being all lost upon the death of the said Major Sydenham together with what else he had, your Petr. was made uncapable in the ordinary way to recover what was due.

That your Highness' Petr., after a two years' attendance on the Parliament for satisfaction, did apply himself to a Committee newly constituted for receiving petitions, who, upon examination of his case, did order that Mr. Carie Rawleigh should report their sense to the Parliament, which was that satisfaction should be made him out of Irish lands, but your petr. not being able to get on the report till those lands were past away by Act, could not enjoy the benefit of that order. Your Petr. therefore most humbly prays your Highness that your Highness will please, in consideration of the faithful and valiant services of your Petr.'s said brother, to order such satisfaction as in your Highness' piety and wisdom shall be thought fit to be made to your Petr., who hath likewise himself also faithfully served the Parliament with the loss of much blood, and thereby much disabled his body, for all which yet he never sued for any satisfaction. Your Petioner would likewise insist on the many services of another brother of his, one Major Francis Sydenham, slain in the West, whose executors never recovered more than eighty pounds satisfaction for his arrears; but your Petioner shall cease to trouble your Highness.

And your Petioner shall pray, &c.,

THO. SYDENHAM.

Endorsed—Not relievable after
25th March.
Capt. Sydenham's Petn.
ref. 8th March $\left.\begin{matrix}5\\3\end{matrix}\right\}$
ref. 16th March $\left.\begin{matrix}5\\4\end{matrix}\right\}$

Friday, March 3, $16\frac{53}{54}$.

His Highness being very sensible of the matters represented in this Petition, is pleased, in an especial manner, to recommend it to the Council that they may give the Petr. due satisfaction, and that with all convenient expedition.

J. SADLER.

ON

CRIMINAL RESPONSIBILITY IN THE INSANE.

BY

T. CLAYE SHAW, M.D.

Doch—alles, was mich dazu trieb,
Gott, war so gut! ach, war so lieb!
—*Goethe.*

We still seem as far off as ever from the time when the fact of a person's insanity, declared emphatically by experts in mental science, shall be deemed in itself, without being criticised and analysed, sufficient to save him from the extreme penalty of the law.

The determination of the presence of insanity is as much a scientific question as is that of a pneumonia or a fracture of the leg; and when it is declared on reliable evidence that a person is suffering from an affection of mind the ultimate dealing with the prisoner becomes a simple matter: he must be absolved from punishment, but placed in circumstances that prevent a repetition of such irresponsible acts.

If the medical evidence as to insanity is conflicting, the question becomes very complicated, because the judge and jury are not in a position to weigh and decide upon it, any more than they would be to decide between two opposing theories in mathematics propounded by men of equal reputation. The practice now-a-days is certainly peculiar, if what generally happens is to be taken as the orthodox course. A man commits a dreadful deed, and his counsel calls special medical evidence to show that at the time the man's mind was unsound; notwithstanding this, the judge places certain theories of his own about knowledge of right and wrong, adaptation of means to an end, and so on, to the jury, not always in such a way as to be clear to those who have made metaphysics a study. It not being disputed that the man at the time knew the difference between right and wrong, the jury have no

difficulty in finding him guilty, and so sentence of death is passed. Then follow letters to the journals from men versed in the habits of lunatics to show that after all the man was insane. A separate inquiry is then ordered to be held, and in the end the fact of insanity is established, and the sentence is changed to detention in an asylum till recovery or death ensues. Why should it be necessary to upset and make ridiculous the verdict at the trial? Because the method of procedure in introducing the plea of insanity is unsatisfactory. Whenever this plea is set up, it should be the duty of certain experts specially selected for their knowledge and experience of insanity, to examine the person and record their opinion. Then there would be something tangible for the jury to deal with. Instead of being perplexed with abstruse theories concerning affective or emotional insanity, impulse, and so on, there would be the fact before them that either the prisoner was insane or that he was not.

In crimes other than murder the difficulty with juries does not seem so great. Take a case of suicide, for instance; here, although no previous act of insanity has been noticed, although the friends testify that up to the committal of the fatal act the individual was apparently in good health and spirits, there is never any difficulty experienced in getting a verdict of "suicide during temporary insanity." The idea of self-destruction is so inimical to every feeling of mental health, that to take one's own life is readily voted an insane act. Why then is the same conclusion so tardily arrived at in cases of wholesale purposeless murder? The two acts are, as acts of impulse, the same. Doubtless the fear that in every case of murder the plea of insanity would be set up causes the administrators of the law to regard the plea with jealousy. As a matter of fact, it is very generally so set up, and seeing that medical evidence does not always bear out counsel's opinion as to the presence of insanity in a case where there is no other way of getting out of the evidence, it would appear that there is little danger of irregular and unscientific medical testimony being made available to shield a deliberate villain. It is worth noting that stealing, murder, and suicide are the forms of criminal acts most associated with insanity, because in the first form delusions of wealth and property are the immediate causes, and in the last two impulse. The deliberate garrotter, or systematic housebreaker, the plotter and cool contriver of burglaries, are not, as a rule, criminals through their insanity, and one rarely hears of the plea of insanity being set up to defend a man whose crime can be condoned by a term of

transportation. It is to save life that the plea is chiefly raised, and to the observer of the acts of the insane there is a strong conviction that, except when political, mercenary, revengeful, or self-protective reasons are the motive, there is always insanity present or some form of degenerated intellect, putting responsibility out of the question. Many people who are in reality irresponsible are allowed to remain in society, and to transact business; and so long as nothing untoward occurs, the idea of putting a restraint on their actions would be scouted as not being consistent with the general notions of liberty of individuals; but the moment anything happens to place them in a perilous position or to stain the family name, protection is at once sought from the shield of mental weakness, which has been all along concealed from public view. It would be thought cruel to place all irresponsible and affected persons in positions of safety as regards themselves and others, but how often does it not appear that such a course would have been the truly kind one! At present we accord them a liberty of action they are not able to exercise properly, and hold them responsible for the criminal acts to which we tempt them. The unexpected breaking of a law of nature may be the first sign, as it is the most positive, of a defection from the normal state. The knowledge of the right or wrong of the deed may be present during the committal of it, or it may not; but whether present or not, the act may still be one of non-responsibility. To make this knowledge indispensable for the successful setting up of the plea of insanity would be to secure the immunity of some who are clearly guilty of homicide or suicide, and to condemn the insane murderer; it would, in fact, place some forms of undoubted criminality on the same basis as easily recognised forms of insanity. There are some forms of murder where a man is justly held responsible for his deed, even though he may recollect nothing of it, as where a man in a fit of intoxication kills somebody and afterwards remembers nothing of the circumstances. Again, attempts at suicide often occur where the individual remembers nothing at all of jumping into the river or using a knife, and doubtless numbers of successful suicides occur under the same conditions of temporary unconsciousness. I have often conversed with persons who have cut their throats whose first knowledge of the deed came to them after its accomplishment, that is, when the gorged and congested brains were relieved by the hæmorrhage, and they were again practically sound in mind. But these instances are very different from that of the man who, acting on an impulse which he cannot resist, yet retains the knowledge that it is not the right thing to commit a murder, and knows too what the consequences

of such an act will be. In the one case, the man is insane, though with a complete knowledge of right and wrong, and should escape the extreme penalty of the law; in the other, the act partakes more of the reflex form, being prompted by the chance proximity of water or knife; the man has at the time absolutely no knowledge of the difference between right and wrong, and is not really conscious in the strict sense of the word, and yet should suffer. Judged by the legal necessity of non-responsibility, the sodden drunkard would be absolved, while the lunatic would be hanged. In the order of psychological manifestations, the impulse to do something comes first. The knowledge of right and wrong is a later acquisition, never arrived at by some minds, ignored by others, made the guide of action by the majority, being indeed the rudder that directs our course of conduct. When a ship without a rudder is driven before a strong wind in a stormy sea, we have a fair notion of the results of an impulse unguided by our experience of right and wrong. If we note the various functions of the sane mind, such as memory, instinct of self-preservation, will, knowledge of right and wrong, reflex cerebration, power of acting upon consideration apart from impulse, *i.e.*, of subordinating impulse to reflection, correct appreciation of the circumstances in which the individual happens to be placed, *i.e.*, absence of delusions, and, noting these, take the clinical histories of well-attested cases of insanity, it is seen that an aberration of any one of these functions may be the first symptom of the disease, or the commencement may be in the obscuration of more than one, or even of the whole number.

Correct brain action is the co-ordination of all the impulses, acquired knowledge, sensations, &c., that arise in the life of the individual, and when there is incoördination, *i.e.*, insanity, the result may be far different perhaps from anything we could anticipate or guess. If it can be shown that in one case insanity may begin by delusions, that is, an incorrect appreciation of the circumstances in which the individual exists, that in another case the memory is first affected, that in a third the knowledge of right and wrong may be present, whilst the suicidal impulse is the first symptom (and these are clinical possibilities), then there is no *primâ facie* reason for denying that the impulse to destroy may be the first sign of an insanity which, beginning with violence, may end in perhaps a quiet and harmless form, just as an apparently harmless delusion may be the precursor of furious and uncontrollable mania. By the first sign of an outbreak, I mean the first objective sign; for generally the patient has felt in an abnormal state for some time previously, but has gone on as usual, giving no rise to suspicion among his friends

that anything was being brooded over. This we know from the confessions of persons who have been frustrated in their suicidal or homicidal attempts.

A short time since there was brought under my notice a young man who had suddenly conceived a murderous impulse towards a person who had always been exceedingly kind to him; the existence of this impulse he communicated to a third party, who had him placed under supervision, so as to prevent the carrying out of the impulse. He afterwards became demented for a time, but finally recovered. When convalescent he told me that the particular homicidal impulse was the first feeling of an insane character that he remembered; that he knew the wickedness of such an act, and had tried in vain to fight against his urgings, but that he certainly should have carried out his design had he not been prevented. There was no doubt of this man's insanity, for I had him some time under observation; if the first sign of his insanity had been successful in its issue, it would have been difficult to persuade a jury to take a right view of the case.

Here is another instance of insanity beginning in homicidal impulse; the girl is now under restraint in an asylum, and other symptoms have since developed. A young woman, aged seventeen years, was under-nurse in a family where she was much valued, and of which she had the full confidence. There was no history of insanity in her family nor of mental weakness in any form, nor was anything peculiar noticed in the young woman; but one evening her mistress noticed her looking in a fixed, stolid way at her, and ran to her husband asking him to come and see her, as she "seemed as if she was going to murder her." The husband went at once and found the maid going into the bedroom where the children were sleeping, and concealed in her right hand (to which attention was attracted by her holding the arm in a peculiar way) was an open razor. She was carefully watched, but the next day she made two very determined attempts at suicide, and she had finally to be removed to an asylum. Now in this instance, prior to the homicidal attempt there was no sign whatever of mental derangement, although the after-development of suicidal attempts and of a demented state was more rapid than occurs in the majority of instances.

Loss of memory is often found to be the only sign of mental incapacity, there being at the same time perfect knowledge of right and wrong, freedom from delusions, and perfect adaptation of means to an end. I have a case of this kind now under treatment, where the presence of harmless epilepsy and loss of memory are the only evidences of weakness of mind. There is little

doubt that other symptoms of insanity will show themselves; but supposing this woman were now to commit a murder, the legal dicta of responsibility would be complied with, although the mere fact of her being in an asylum would assuredly secure her from an extreme verdict. To some persons who have passed through an insane attack the past is at times a blank—they remember nothing at all about it; to others, though they remember all that has occurred, it is impossible for them to state the impulses under which they acted, or why they harboured what they now see to be delusions; they will acknowledge that whilst they knew perfectly well that they were in the wrong in acting, talking, thinking as they did, still they could not help doing it, but "felt that they must do it." If those persons who have been through the condition cannot explain their foolish acts otherwise than by acknowledging the overpowering force of the "impulse," how can merely objective reasoners come to a trustworthy conclusion about the necessary connection between the commission of a crime and the knowledge of its wickedness? To most insane persons the consciousness that they feel all that hey say may be real, though certain signs make us sceptical of it. For instance, a man comes to us with the tale that he is being every minute torn by pincers, that his intestines are being dragged out through his umbilicus, &c., &c. Now all the while that he is giving this fearful history of his sufferings, his face and voice betray no sign of suffering; on the contrary, he will alternate those delusions with others of a grandiose character, all made with the same unaltered facial expression, and with this there may be the most absolute incoherence. I am inclined to think that the condition is more allied to that of dreaming than to the consciousness that we have in healthy mental life. Certainly the incoherence often occurs unconsciously; for I have noticed this peculiar fact, that if you interrupt a person talking in an incoherent manner with some phrase that has no connection with anything he is saying, he will be, as it were, put out in his incoherence, and you may recall him to a temporary consciousness, when he will ask what you mean. I mention this to show that there is a process in the diseased mind, although we cannot enter into it, and to argue thence that if the mind is unhinged any result may be expected to follow, and whether it is a sudden act of violence or the phase known as acute dementia or melancholia attonita depends on circumstances the conditions of which we have not yet fathomed. An act of impulse is usually interpreted as one of momentary or very short duration, the force of which is so sudden and strong as to admit of no reflection, no power of exercising the knowledge of right and wrong.

I conceive this to be an erroneous appreciation of the time over which an impulse may extend. There is no reason why the feeling of being urged to do something should not extend over a very long period if the impulsive feeling is due to disease or to instability from hereditary taint; and as the duration is longer so will the acquired force be greater, and all this time the person may be striving against the feeling, knowing the difficulties it will bring him into, and the moral wickedness of it. This we know by the statements made by patients who have been in this condition and have recovered, or who yet, remaining in this state, ask that precautions shall be taken to prevent them doing the mischief they feel themselves powerless to prevent.

The recognition of the power of an impulse to remain for a lengthened period will explain how it is that a person under such influence will select his opportunities, make ready his appliances, and act with the determination and completeness that usually characterise these acts.

When the insane in asylums meditate an attack, they more usually than not choose their time and the means of attack; these are planned with great cunning; and the difference between such acts and those of a sane man in no way lies in the knowledge of the wrong of the act, or in the preparation and perfection of the means for its accomplishment, but it lies in the history of the individual and in the motives for the crime. It is anomalous that the law, whilst visiting with the severest penalties acts which are the outcome of uncontrollable impulses, takes no steps to disallow the factors of this disordered state. It allows marriages between persons so allied by consanguinity, or so diseased bodily that mental weakness is almost sure, as a physiological necessity, to follow in the offspring. There is a male patient here whose five brothers and sisters are all in asylums, and there is no doubt of the insane temperament of one at least of the parents. Not long since a patient was admitted to this asylum in a state of acute maniacal excitement from puerperal causes. She was rather imbecile, and had always been so, but in addition she was epileptic, and had had fits before she was married, of which fact her husband was aware. She had not been long married before the fits recurred, and she showed decided suicidal tendencies. In due time she brought forth a living child, but being exceedingly melancholy, she had to be placed under certificates. After a considerable detention she was discharged to the care of her husband. With such a heritage of disease, how can such a child, if he lives to become a man, be responsible for any action contrary to law, that is, to a well-balanced organisation, that he may commit? Suffer from

his organisation his moral nature must, and he will probably pay the penalty for it in convictions for minor offences at least. But whether a person with a congenitally weak brain-power commits a small crime or a great one is probably a matter of chance and accident. He is equally irresponsible whether he steals a pair of boots or commits a murder, and the distinction which the law makes as to degrees of crime is probably inconceivable to him. To a sound mind, to commit a petty act of theft is as inconceivable as it would be to commit an awful crime; and if anything occurred to prompt such a mind to one act or the other, the fact of death being the punishment of the larger offence would in no way act as a deterrent. Theoretically, then, there are no degrees of crime, and when the mind is so diseased that crime is the result, punishment has practically no deterring influence. An habitual criminal can no more be deterred by punishment from his obliquity than he can change the constitution of his cerebral cells. I have under care a man who has passed fourteen years of his life in penal servitude, but who never ought to have been sent to prison, for he was born in a lunatic asylum, and he was sent to prison because at his trial no plea of insanity was raised, his crime not being one of murder, though, had it been, he should, and probably would, have been acquitted on the ground of insanity. It may be urged that, according to this, no crime ought to be punished. I think that crime ought not to be punished where it can be shown that the criminal's antecedents of birth are such as to have superinduced in him a congenitally enfeebled mind; but there would yet remain a large contingent where it would be right to punish the offender, such as acts of robbery or violence done under the influence of drink. Take a man of healthy antecedents, living an industrious sober life; for him to commit such an act as that of Guiteau or Gouldstone would be an impossibility; but let his mind become impaired, then any result may follow, and what does happen will be greatly determined by accident. Patients in asylums will commit impulsive acts over and over again, to the injury perhaps of themselves only; and though after the act they will own the wrongness of it, they will repeat it whenever the impulse to do so recurs, and they are as powerless to restrain themselves as they are to alter the nerve-change which is the cause of the recurrence. Natural laws may become masked by habit or duty; thus the instinct of self-preservation becomes almost annihilated by constant exposure to danger, that is, by being kept in circumstances (under pressure of duty, &c.) where life is endangered; but though masked, the instinct may not be stifled; it remains more or less present. In the same way love for offspring is a law of

nature, and when children are punished, the feeling of affection is there all the time, although it may seem to be absent: it is simply masked. So it is that when a man or woman murders the children in an insane outburst, there may be real affection and fondness present all the time. If, then, owing to disease a man conceives it his duty to murder some of his dearest friends or relatives, he will go against his instinct (which may be present), and will perform the act just as another in the performance of what is his duty will sacrifice his own life, *i.e.*, will go against his instinct. If, then, duty thus acts on a sane man, what must be the force of the "duty" which the insane man feels? The sane man who, with the knowledge of right and wrong, deliberately sacrifices his duty to his instincts, gets blamed for it; the insane man, who carries out the fearful "duty" imposed upon him by his disease, and who in doing this sacrifices his instincts, is condemned. No praise is too great for the hero who saves life at his own risk; no damnation too deep for him who takes it.

The greater liability of the undeveloped or imperfect mind to give way to impulse is seen in children and imbeciles, where the knowledge of right and wrong is connected with certain acts only; such persons are incapable of generalisation, and hence have the knowledge only in regard to some particular impulses, those of which the connection has been established; given a wider range of impulse, they cannot check it by any knowledge they have experienced, and hence may be led into crimes. The magnitude of a crime cannot be made the test of the mental unsoundness of an individual, because then, as if to prove the unreason of it, all that would have to be done to obtain acquittal would be to be prodigal of blood. It is true that murders not due to insanity are generally on the small scale, whilst homicidal insanity is noteworthy for its carelessness of life and its terrible completeness; but this is not always the case, and accidental circumstances often determine these points in the one class as in the other.

To criticise in others the knowledge of right and wrong from the subjective point of view of a sane person is incorrect. It may indeed be said that in many cases the insane person has no subjectivity; he becomes the object of a subjectivity or subjective state over which he is powerless. This is especially and more easily seen to be the case when persons manifest delusions or hallucinations, where it is clear that the whole subjective life of the individual is changed, the thoughts, the guides of his actions, the control over his impulses; the nature of the man becomes changed, and he is virtually another being. With this comes a complete mental change, so that objects of affection and care be-

come those of hate and neglect; a studied reserve may give place to boisterous hilarity, and this *bouleversement* of his character, being opposed to circumstances with which he was before in harmony, and which cannot suddenly change and adapt themselves to his altered existence, produces the discord which, often too late, the friends notice as insanity. Alteration of the affections is one of the commonest signs of insanity; positive hatred of nearest relatives is very common in the most impulsively insane; and this alteration of the affective state may co-exist in the mind of the person with the knowledge that he is in a different condition from his former self. I have known a patient who has recovered from his insane state declare that what he remembered of his condition was, that whilst knowing that he was, so to say, himself, he yet felt an overpowering conviction that he was some one else; an influence that he could not possibly shake off, and which he felt bound to obey. The man was, in fact, a compound of two beings, the one, his proper self, subordinated to the secondary one engrafted by disease. His normal self would try to assert its proper prerogative to keep him in the right course of action, but the ever-present irritation would maintain his altered self, tiring out his will from keeping the mastery over his impulses. Goethe recognised this dual nature when he wrote—

> "Zwei Seelen wohnen, ach! in meiner Brust,
> Die eine will sich von der andern trennen."

To resist such a motive force, the result of disease, is as impossible as to resist the gradual weakening, insensible at first to others, but only too apparent to the victim, of a progressive paralysis or ataxia. We can to some extent alter a man's subjectivity by exposing him to influences of another order, and the education by which this result is achieved is simply the production of an irritation in certain cells. If, then, we can make a thief or a respectable man by a physical process, it is evident that a central pathological irritation may do the same thing; and the reason why our prison and educational systems fail is that the ameliorating influences are brought to bear either for too short a time to change a disposition already formed, or are insufficient in force to overbalance the grown evil. Some of the most extraordinary cases seen in asylums are those of recurrent insanity, especially the form called *folie circulaire*, where we may note the rapid transition from a person leading a quiet, useful, placid life, to one of violence, indecency, and mischief, a change that may occur almost suddenly. I have a patient of this kind who repeats the round of sanity, violence, and dementia

frequently, and yet, beyond saying that she cannot describe how she feels, she can give no account of her state when going through the cycle. The first act of her change from the sane to the excitable stage is generally signalised by an impulsive and often violent act, such as tearing her clothes or smashing glass; and though it is true that she remains in the excitable stage so long that anybody would be easily convinced of her insanity, still it is noteworthy that the first sign of her attack is invariably an impulsive one. There is here no period of incubation, but the change comes on as suddenly as an epileptic fit, which it resembles in its explosiveness.

Changes of temperament are often seen in individuals, leading to what are recognised as "peculiarities." As a rule these are harmless, and therefore pass unnoticed; but such people should always be regarded with suspicion; they are never safe as regards themselves, nor are others safe in their hands. Their eccentricities may eventuate in nothing, but they may lead to disastrous results; and the worst of it is, that no one can say whether the path they are following leads to danger or not. Should a catastrophe occur, the plea of insanity is brought up, but it may be doubted if his eccentricities would have justified in the eyes of many his detention in an asylum. Yet what is there to prevent such a person from marrying, and what can be expected of the children? Unfortunately many of the persons discharged from asylums are very prone to recurrent attacks. Yet there is nothing to prevent these people from marrying; and so it seems that to root out insanity is an impossibility; all the factors for its production are present, and nothing but the education and good sense of individuals will ever prevent it. A judicious education of the young will do much to nullify the nerve-weakness that so many are born to; but the deeper the study of insanity, the more it is evident that the factors of mental unsoundness ramify so widely that crime must accompany our present civilisation; the science which teaches us this ought also to open our eyes to the irresponsibility of these sufferers, and to point out the best way of protecting them and society at large.

ON A PECULIAR NUMBNESS AND PARESIS OF THE HANDS.

BY

J. A. ORMEROD, M.D.

My attention was first called to this set of symptoms by Dr. Wickham Legg in the Casualty Department. Since that time I have been able to collect several cases, and they are, I am sure, sufficiently common. But they are not, so far as I know, described in most medical text-books, and although in no sense grave, yet they may be sufficiently troublesome to cause the patient to relinquish her employment. I hope, therefore, that the following examples may not be thought altogether uninteresting.

The symptoms are remarkably definite in character. They occur in women, usually about the climacteric age, and begin in the night. On waking, the patient has a feeling in the hands, or hands and arms (commonly of both sides), of numbness, deadness, pins and needles; sometimes there is actual pain, severe enough to wake her. There is also loss of power; the hands and arms become useless, and she cannot hold things. This may so far predominate that the patient comes to be treated for a supposed paralysis. Sometimes also the patients say that the hands swell, the veins swell, &c., at the time. The symptoms pass off in a little time, and rubbing suggests itself as a natural remedy. But occasionally they manifest themselves in the daytime also, and then principally when the patient sets about her ordinary work—washing, scrubbing, needlework, &c.

I.—February 1882.—Mrs. S., age between 50 and 60, an active and healthy woman, has had for the last eighteen months the following symptoms:—

She is woke up nightly by pains in the fingers, hands, and up

the fore-arms. The hands seem to become stiff and useless, and when she gets up look, she says, as if they were dead. The pain is severe and prevents sleep.

She is (just now) rather pale and puffy looking.

Pulse a little hard, and second sound over aorta rather accentuated. No albuminuria. On the articular ends of some of the phalanges (right hand) are small hard nodules. She says that the fingers are rather stiff through rheumatism.

She took iodide of potassium (gr. v. ter.) for a fortnight with no benefit; colchicum (ext. acetic. gr. i. o. n.) tried for a few nights did not suit her at all; quassia and iron taken for over a fortnight gave only slight and temporary relief. A fresh nodule appeared on the distal end of the middle phalanx of the left hand; it was (at least while forming) larger and less hard than the others, though firm.

She connected her complaint with the use of water for scrubbing floors; gave up her place as servant on this account, and her hands improved afterwards.

This patient (whom I have had ample opportunities of seeing) was not at all hysterical, and there was no neurosis in her family.

II.—April 24, 1883.—Elizabeth C., 56, married. Victoria Park Hospital. She comes for a cough contracted during the fogs of the preceding winter.

She complains also of a numbness, like pins and needles, in the hands. It is not felt in the daytime, but wakes her up at night. It occurs first in the left hand, then in the right, and sometimes in the feet.

The fingers, she says, seem to drop, and she cannot extend them; not that they are drawn into this position, but because she loses the power over them. The feeling may last five minutes; she holds her hands up and bites the fingers to bring them round.

In the left hand, at the distal ends of the middle phalanges, there are projections the size of large peas, or larger, due apparently to the thickenings of the bone. They are caused, she says, by washing, and sometimes give her pain.

Pulse not easily compressible. Nothing definitely wrong in chest.

Formerly she was subject to sharp sudden pains in the legs (more rarely in the hands), in bouts lasting occasionally for a week. Apart from these, which she calls rheumatics, she never had gout or rheumatism. The patellar tendon reactions are present.

Menopause two years ago.

Neither herself nor any of her relations have had fits. Her mother had numbness in the hands.

III.—Mary Ann B., 46, single. Queen's Square Hospital, April 25, 1883. She complains of losing the use of her hands in the night. About half-an-hour after going to sleep she is woke by a creeping sensation in the hands, and for half-an-hour she cannot use them. She rubs them to bring them round, but at first can hardly get one on to the other to rub them. These feelings began in the right hand eighteen months ago, and in six months spread to the left. At first the fingers only were affected, but it now spreads all up the fore-arms. There is no actual pain, but her hands feel stiff the day after.

She is subject to pain in the head and feelings of faintness; at the times when her hands are bad she says her eyesight is misty.

She has had the attacks every night, or every other night, till last week, when they ceased, and the left knee became stiff, heavy, and rather swollen.

Menses irregular the last twelve months and absent the last three months. She has worked hard at needlework all her life. When young she had both gout and rheumatic fever. Though "nervous," she never had any kind of fit. Gout and rheumatism are in her father's family. A sister once lost the use of both hands for three months, but apart from this, she knows of no nervous complaint in the family.

Pulse natural; first heart-sound not quite clear at the apex. No albuminuria. Tendon reactions well marked, in the arms especially. Some puffiness of the tissues round the left knee-joint. On passive movement of the knee-joints, especially the left, crepitation can be felt.

Pot. bromid. ʒss. o. n.

She became much better, and by the end of June the attacks came only once a month, and showed a tendency to limit themselves to the right hand.

July 12.—There is some diffuse redness, with œdema in the lower part of the right leg, and œdema of the right ankle. The calf is tender. This came on suddenly in the night four days ago. The hands, which had been bad in the preceding week, have been well since the leg became inflamed.

Pot. bicarb. gr. xv., tr. nucis vomic. ℥v., tr. gentian. co. ʒss. ter.

And after a week's time ext. colchici acetici, gr.ss. o. n.

The left leg became somewhat similarly inflamed, and then

both legs got slowly well. As they improved, the numbness of the hands reappeared, but it was not nearly so bad as formerly. In September she said it came on only after excitement—the night after.

IV.—Marianne H., 28, single. Queen's Square, March 29, 1883. Last September a pain began in the right thumb suddenly in the night. It passed up into the elbow, and into the middle and index fingers. The same pain occurred in left hand and arm, but with less intensity. It commenced with, and has always been accompanied by, numbness. The pain continued during the day, but was relieved by electrical treatment. It still comes on in the night, though it does not now wake her as at first, and in the daytime when she uses her hands (she is a telegraph clerk), it makes her hands feel weak, and she says the veins swell at the time. Her chief symptoms now are numbness and weakness on waking in the morning; pain in the daytime when she uses her hands.

Healthy-looking, but says she is "naturally nervous." Heart normal. Menses regular till last month. She never had fits herself, but a brother and a half-brother (by father) had fits, and some of her father's relations have been paralysed.

Pot. bromid. 3ss. o. n.

She improved rapidly, and by April 19 was at work again opening letters. This brought back the numbness.

June 7.—No numbness. Pain only at the menstrual times.

Pil. aloes et myrrhæ, gr. v., o. n.

In August, after a holiday at Brighton, she was able to go to work again.

V.—Maria Y., 40. Victoria Park.

January 1882.—Comes for a pain in the chest and back. Physical examination reveals nothing. She complains also that on waking in the morning her hands become dead and powerless, and are painful as they come round.

Mixture of gentian and rhubarb; pill of aloes and nux vomica.

February 11.—The hands are no better; they trouble her now in the daytime as well. She says they become red at the time of the attack, and the veins swell.

Pot. bromid. gr. xx., o. n.

H$^{st.}$ quassiæ c. ferro. ter.

April 1.—The hands are no better, and still are bad in the daytime. In the day the affection comes on when she uses them; it is not so much pain as powerlessness, which makes her

drop things. (Her work is at a sewing-machine, and she has no scrubbing to do.)

She is healthy-looking, has three children, menses regular but scanty, some leucorrhœa. She has never had gout or rheumatism. Two of her brothers and one sister have convulsive fits. She herself never had convulsions, but used to have fainting fits, which ended with crying. Something of the kind came on while she was talking to me. She turned very pale, the sweat broke out on her forehead, her pulse could scarcely be felt, and she seemed about to lose consciousness every minute. She did not do so, however, but went out, saying she should be better in the air.

April 6.—Pot. bromid. gr. x., tr. digitalis, ℥ x. While taking this during the next month, both the numbness of the hands and the fainting attacks got better.

VI.—Harriet Jane R., 21, laundress. Queen Square. She has had fits for four years. In these she loses consciousness, is convulsed all over, bites her tongue. After them she sleeps. They are preceded by startings of the limbs; and these occur sometimes independently of an actual fit.

Her father drank, and had fits "when upset;" his sister had fits.

Since the fits came on her, her hands have been troublesome in the night-time; they feel numb, and there are shooting pains in them, and they seem to swell. She has much cleaning work to do. She was treated with bromide, sometimes with the addition of tincture of digitalis. The fits improved on the whole, and the hands got decidedly better. They were better when she did no washing.

VII.—Ann D., 68, widow. Queen Square, January 17, 1883. She complains of pain in both hands, which she calls "a grinding pain, like labour-pain in the hands," and numbness at the same time. She says the hands become fixed, the fingers clench into the palms, and can be pulled back with a jerk; the hands swell also. These attacks began, she thinks, in the night, and they are still worse then than in the day. In the day they come on when she tries to use her hands. She used to do needlework.

Pulse and heart normal. No albuminuria. Bowels always relaxed.

She never had gout; there are no fits in her family. She herself has had what she calls "twitchings" in the night.

Pot. bromid. ʒss. o. n. relieved her a great deal.

VIII.—Lydia L., 38. Queen Square, May 3, 1882. Numbness in the left hand for seven years, worse at night. When she goes to sleep, she is woke by a pricking sensation in that hand; the limb feels dead and powerless up to the shoulder; she cannot lift it. As it comes to, there is a burning pain in it. She has noticed no swelling nor change of colour. She does not lie on that side more than on othe ther. During the last four months she has had the same sensations in the daytime.

She does much dressmaking, and has to hold her work in that hand.

General health good, but she says that she is "very nervous." No fits nor insanity in her family, but her mother died of hemiplegia, which came on gradually.

Was treated with bromide, and with bromide and digitalis, but did not improve.

IX.—Marian A., 47, married. Queen Square. This patient, previously under my colleague, Dr. Horrocks, for pain and paræsthesiæ in the hand, came under my care when he resigned office, May 1883. Her symptoms, now of more than two years duration, consist of pain and numbness in the right hand, which comes on when she puts her hands into cold water in the morning, or when she tries to do needlework. It used to be very bad in the night when she went to sleep; she is certain that this did not arise from lying on it. The appearance of the hand does not change. (She said afterwards that it swelled slightly the morning after it had been painful.)

Menstruates every three weeks. Her father died of apoplexy, but there has been no other kind of fit in her family, nor indeed any neurosis, nor gout, nor rheumatism. She was never hysterical.

She has improved, on the whole, while taking pot. bromid. gr. x. ter., but still complains of her hand whenever the weather is cold or wet.

X.—Sophia H., 43, widow, mission-woman. Queen Square, September 26, 1883. Pins and needles in the right hand on waking in the morning. Pain in the daytime when she attempts to do anything. Duration three years, getting worse the last year. Now the left hand is becoming affected; it goes to sleep in the daytime. She herself ascribes the affection to a habit which she had of taking hold of the cold iron bedstead when she first woke.

Menses still regular. She never had fits, but has had what she calls slight hysteria. A sister had epileptic fits.

Pot. bromid. ʒss. o. n.

October 3.—Much better. She can now hold things without pain, and only feels a little stiff in that arm.

XI.—Mary C., 47, married. Victoria Park, April 24, 1882. Giddiness for the last two months (she is rather deaf). During the last six weeks she has had numbness with loss of power in the left hand and arm when she wakes. It feels as though she had lain on it, but she always lies on the other side. No pain in it.

During the last two weeks, however, she has had severe pain in the left flank and in the back: since this appeared the numbness has gone.

No menses for the last five years.

XII.—Elizabeth H., 46. Victoria Park. She complains of a choking sensation at the chest, with pain at the heart; also of swelling of the hands, only from time to time, and mostly when she lies down. They become dead and numb, and ache when they come round.

These symptoms came on two months ago, after the death of her mother, and it is to the shock received from that event that she ascribes them; but she had at that time to do much wringing in cold water. She had been subject to "heats" and giddiness, but these stopped when the present symptoms came on.

She was treated for two months (quassia and iron, then gentian and rhubarb); the hands got nearly well, and the left arm, which she said seemed to be paralysed, also got well.

An obvious comparison arises between this affection and the deadness of the fingers which some people experience on exposure to cold, or even without such cause. It would then, I suppose, be ascribed to vascular spasm.

Dr. Southey[1] mentions that a patient of his, who suffered from symmetrical gangrene, used to experience, a year before, numbness and coldness of the fingers, which went dead, and used to tingle and burn on coming back to themselves; and Raynaud describes local syncope (as in dead fingers), local asphyxia, and symmetrical gangrene, as differing chiefly in the degree of persistence of the vascular spasm. I am not disposed, however, altogether to identify the symptoms I have described with ordinary dead fingers; for, in the first place, these latter are not, so far as I know, particularly apt to occur during sleep;[2]

[1] St. Bartholomew's Hospital Reports, vol. xvi. p. 16.

[2] Raynaud's third case (De l'Asphyxie Locale, &c., p. 49) may be quoted as occurring in sleep; but this has some exceptional characters.

and, secondly, the bloodlessness of the parts must needs attract attention, whereas only one of my patients said that her hands looked dead; usually there was no change in appearance, or at most the hands "looked red," were swollen, or "the veins swelled." Certainly the purely nervous symptoms—numbness, powerlessness, pain—were much the most prominent.[1]

A better comparison may be made with the sensations evoked by the compression of the nerves caused by lying on the limb.[2] That the symptoms are not actually produced in this way is evident, because they are usually bilateral, and because where unilateral this possibility had already been considered by the patient. Indeed, even a functional disturbance, affecting simultaneously the nerve trunks of both arms, seems rather hard to imagine. Let us, however, consider as a parallel a mild case of tetany. The spasm is here bilateral, and seems limited not merely to the hands but to the muscles supplied by the ulnar nerves.[3] But its further spread in grave cases, and the phenomenon of facial irritability in the mild,[3] show that a much more general motor irritability exists. And similarly it seems possible that in the general depression of function which takes place during sleep, the hands and arms (or rather their nervous apparatus), overtaxed during the day by prolonged cold or exercise, share more deeply than other parts, and that they are thus less readily roused from it. The symptoms and their explanation, then, are summarised by the expression "the hands go to sleep." But the later phenomenon, viz., numbness, &c., coming on when the patient attempts to use her hands, appears to be a more distinct perversion of function, for the conditions which obtain during sleep are here reversed; there is stimulation, not depression.[4]

It may be more useful to consider the kind of patients in which these symptoms occur. I have not yet seen a typical case in a man, though I have notes of one or two cases which might perhaps be put in the same category.

[1] Raynaud, op. cit., p. 111. "Il ne faudrait pas confondre cet état avec l'engourdissement qui succède à la commotion ou à la compression d'un nerf. Dans ce dernier cas, ce sont la sensibilité et la motilité qui sont primitivement atteintes, la circulation restant intacte; c'est précisément l'inverse qui se passe dans la syncope locale."

[2] But on the subject of paralysis from pressure, see Dr. Gee's remarks, p. 30, vol. xvi. of these Reports.

[3] Abercromby on Tetany in Young Children, pp. 16–20.

[4] As presenting a certain analogy, I may quote Sir James Paget's case of local asphyxia, vol. vii. p. 68 of these Reports. Here the feet became bloodless *during exercise, i.e.*, just when we should have expected their blood supply increased. See also Weir Mitchell's first case, "American Journal of Medical Science," July 1878.

The women are generally over forty, about the time of cessation of the menstrual function, though this is not always so. Some are no doubt hysterical; but there is, on the whole, less extrinsic evidence of hysteria than one would expect. One of my patients had fits, apparently of true epileptic character. There was epilepsy in the family of three others. In the three first cases there was undoubted evidence of gout or rheumatism, viz., in the first two, nodules on the fingers; in the second, lancinating pains (resembling the pains of tabes dorsalis); while in the third case, not only was there a family and personal history of gout and rheumatism, but the neurosis of the hands showed a tendency to alternate with (*a*) an affection of the knee-joint, (*β*) an inflammation of the skin of the leg.

The cause alleged by the patient is usually the use of water in washing, scrubbing, &c.; sometimes other work, such as needlework. The attacks occur originally at night, but may also occur in the day when the patient attempts work. A telegraph clerk (Case IV.) had been told, apparently on this account, that she was suffering from "scrivener's palsy." Bromide of potassium has in some cases given marked relief.

My colleague, Dr. James Anderson, has informed me that this affection has been described by Dr. Weir Mitchell; and I shall conclude with a quotation from his chapter "On Disorders of Sleep in Nervous or Hysterical Persons."[1] The symptoms differ in distribution, but appear to be the same in kind as those I have described.

"There is another and a very interesting sleep symptom seen at times in Duchenne's disease, and in a variety of degrees in some feeble and anæmic persons, but far more common among women than among men. I ventured some years ago, in speaking of it, to call it night-palsy or nocturnal hemiplegia. Since seeing more cases, I perceive that brachial monoplegia is its most common expression. This curious symptom assumes one of two forms, the one common, the other rare. In the more usual cases the sleeper wakes with numbness, or rather tingling and numbness of one arm, a leg alone, which is infrequent, or the whole side including the face, and even the tongue, which is now and then attacked alone. The disorder may be mere tingling, or actual loss or rather lessening of tactile sensation; but in any case, it rapidly fades away or yields to a little friction. At first, while it is in the arm alone, the patient refers it to lying on this part, but this becomes an impossible explanation of the hemiplegic examples.

[1] In his book on "Nervous Diseases in Women." The earlier description which he alludes to I have not been able to find.

"As I have seen in a month three cases of this rather interesting condition, it cannot be very rare. It is significant perhaps that some persons who have gotten pretty well of a hemiplegia of organic cause are liable to awaken out of sleep with numbness and lessened power of the side once palsied.

. . . . . .

"The less common form of night-palsy is perhaps also the more serious, but may be, like the usual examples, but an expression of hysteria or of the exhaustion felt by an ill-nourished brain during the long fast of the sleeping hours. In it the patient exhibits a far more distinct loss of unilateral power, which, however, lasts for an hour or more after waking, and may even become worse for a time instead of at once improving.

"I recall very well the case of Mrs. C. L., æt. 27, who, after profound blood losses in confinement, nursed with success through several excessive menstrual periods. She then had an attack of nocturnal hemiplegia, which became more grave during some hours, and yielded easily to faradic stimulation, iron, and good diet. She had after this several light attacks, and twice well-marked brachial diplegia, which lasted but a few hours. I should add that there was no renal trouble, and that she made a perfect recovery."

CASES OF EXTRA-UTERINE FŒTATION.

BY

J. MATTHEWS DUNCAN, M.D., AND J. MASON, M.B.,

LATELY RESIDENT MIDWIFERY ASSISTANT.

The following cases are recorded with a view to contributing to the natural history of this dangerous morbid condition, and to throwing some light on the method of treatment by attempts to destroy the life of the fœtus.

Case 1.

Isabella H——, aged 38, admitted September 19, 1877, into "Martha." Married sixteen years ago; one child born fourteen years ago. Number of miscarriages doubtful. Catamenia began at 16 years, and were regular. Menstruated last in April; she cannot remember the days. She noticed that her abdomen was enlarging after the month of April, and observed a distinct tumour in June. About the middle of the last-mentioned month she was seized with "spasm" in the abdomen, and had a similar attack a few days later. On the 27th pieces of "thin membranous shreds" were passed per vaginam (which she calls her last miscarriage), accompanied by a sero-sanguineous discharge, which grew thinner and paler, and ceased in a fortnight. Then another attack of "spasms" took place, more severe than the two former, and she kept her bed for the fortnight that the accompanying discharge was present. There has been more or less pain in the abdomen ever since, but no discharge of any kind. She suffered considerably from vomiting, but not in the morning, about a month ago. For the last fortnight the left leg and foot has been getting more and more œdematous, and the thigh

flexed on the abdomen. She has been losing flesh and becoming low-spirited.

Present condition.—Physical examination: The lower part of the abdomen is very full, and prominent just above the pubes to the left of the middle line. This part is soft, elastic, and slightly resonant; the elastic resistance, ill-defined at its upper part, occupies the whole hypogastrium.

The os uteri is rather patulous, and the cervix soft, granular, and fissured. To the left of the cervix is elastic prominence of the roof of the vagina, more marked anteriorly, receiving ready impulse, almost fluctuation, from hypogastrium. If the finger be kept on this bulging, occasionally movements are felt like those of a fœtus in utero. The fœtal heart is heard just above symphysis pubis, beating rather irregularly, 134; the maternal pulse at the same time being 92.

The breasts are full, with distended veins over them. The left thigh is considerably flexed. Some œdema of left leg. There is a hard very tender cord to inner side of femoral artery, and she has pain running down inner side of thigh.

Sept. 24.—Slight watery discharge from vagina; tumour increasing.

Oct. 8.—Complains of frequent desire to micturate.

Oct. 20.—Has pain at night, preventing sleep. Little brownish discharge for the last fortnight; last night it was red. The tumour alters its shape and position considerably. Occasional difficulty in micturition and defæcation. Fœtal heart rather lower than midway between umbilicus and pubes. Abdomen tender. Urine 1023, high coloured, considerable deposit, not clearing with heat.

Nov. 6.—Pain since last note has been usually present, necessitating occasional morphia draughts and hypodermic injections. There has been a constant discharge, small in quantity, and varying in colour from white to red or brown. Tumour felt per vaginam has increased much in size, coming down lower on left side. No uterine souffle. Abdomen much less tender. Fœtal heart as before.

Nov. 21.—Cervix soft, shortened. Fundus of uterus separated from tumour by sulcus. Ready impulse transmitted to vaginal tumour by hypogastric palpation, but not to cervix.

Nov. 25.—On this day patient was much alarmed by cries of another patient, and after the fright no fœtal heart could be detected nor any movements felt, though up to this date no difficulty had been experienced in either respect.

Nov. 29.—Pain in back of right leg; hard cord felt in situation of external saphenous vein. No pain in abdomen.

Dec. 4.—Since last note right leg has been improving steadily, the veins becoming less tender and hard. Slight offensive chocolate-coloured discharge per vaginam.

Dec. 14.—Tumour smaller, especially on left side; discharge less offensive. Patient gets about the ward.

Dec. 31.—Discharge bright coloured; probably menstruation. No pain.

Throughout the temperature had never been above 99.6°, and averaged 98°, and the pulse varied between 70 and 88.

Discharged January 5, 1878, feeling well and able to go home.

Readmitted April 6, 1882.

Has menstruated regularly since she was in hospital, and twice the loss has been great. Has been doing her work. Since she went home she has had a feeling of discomfort, sometimes of pain, in left iliac region.

She has now some difficulty in defæcation, none in micturition. She thinks the swelling in left iliac region has been getting smaller, and it is now much smaller than when she left in January.

Her present trouble is, that ever since the last natural period, six weeks ago, she has had a discharge, for the first four weeks deep red, and offensive, with clots and occasionally "membrane," and afterwards white or yellowish.

A mucous polypus, was found projecting from the cervix. When this was removed the discharge ceased.

The following note was taken:—*Per hypogastrium:* Nothing abnormal on superficial examination, but on pressing deeply on brim of pelvis, an irregular hardness can easily be felt. *Per vaginam:* Cervix moveable. *Bimanually:* Fœtus discovered, easily displaceable, connected with the womb on the left side.

Case II.

(*From Dr. Carter's Notes, published in the "Transactions of the Obstetrical Society of London,"* vol. xxii.)

On January 13th, 1880, M. B——, æt. 38, was admitted into the hospital under my care, being sent in as an urgent case of extra-uterine fœtation by Mr. Hudson, who had lately been in attendance upon her. On admission, the patient was in a very critical state, the temperature high, the pulse quick, 150, and small; tongue dry, brown, deeply fissured; lips cracked, and sordes on them; nostrils drawn up, pinched-looking; respiration completely thoracic; the abdomen distended, and so tender

as scarcely to bear examination. On light percussion, everywhere resonant, to within three inches of the left groin; on deeper percussion, dulness extended to within one inch of umbilicus, and a distinct tumour made out occupying the hypogastric and left iliac regions, reaching up to the umbilicus and extending across the mid line to the right about two inches; fluctuation was distinctly felt deep down. By vaginal examination the uterus was found pushed downwards and forwards; behind the uterus a soft doughy mass was felt filling the Douglas pouch and continuous with the abdominal tumour. She was ordered to be kept as quiet as possible, the abdomen lightly poulticed, and champagne, milk, and Brand's essence given. After a few days the following history was obtained:—She had been married fourteen years; had had one child thirteen years ago; no miscarriage. She had been regular till December 1878, when she ceased, and supposed she was pregnant. She went on well till April 13th, 1879, when she had difficulty in micturition and was unable to pass water. She applied at St. Bartholomew's Hospital and was relieved, four pints of water being drawn off; also on the 15th, and on the 16th. She was admitted an in-patient, and through the kindness of Dr. Matthews Duncan, under whose care she came, I am enabled to give the note that was then made of her condition. "The cervix was lying adjacent to the symphysis pubis; the finger could be passed easily between them; behind the cervix the pelvis is nearly occupied by a tender irregular elastic mass, the retroverted pregnant uterus. An attempt to reduce it was unsuccessful. Two or three attempts made with an air-ball in the rectum were likewise without success." The patient left the hospital May 9th, passing her water pretty freely, and went home, and was able to do her work as before. In June she noticed that the lower part of the abdomen was swelling. She felt movements in the abdomen which continued up till the end of August, about which time she passed a large mass by the vagina, and applied again at St. Bartholomew's Hospital, and was admitted a second time in September. The case was seen by Dr. Godson in the out-patient room, and the fœtal heart was heard distinctly a hand's-breadth below the umbilicus. Through the kindness of Dr. Matthews Duncan I am again able to give the notes that were then made of her state. "September 2d, the patient complains of the womb coming down and a great discharge from it, the prolapse recent; no pain when the womb is down; micturition is difficult. The circumference of abdomen at umbilicus thirty-one inches; distance of iliac crests from umbilicus the same, six and a half inches; from symphysis pubis to umbilicus seven inches. The belly prominent, more on the

left than on the right lower half; above horizontal ramus of right pubic bone, dulness rises half-way to umbilicus; to the left of this, the dulness continues to rise on the left side to the level of the umbilicus; over all the left side a film of fluid except high up, where at the level of umbilicus nodulated hardness is felt resembling the limbs of a fœtus. She says she has felt no feeling of movement in the tumour since she entered the ward. To auscultation the tumour is dumb. *Vaginal examination.*—The cervix uteri much enlarged, easily admitting the finger, probably through the internal os; is adpressed to the symphysis. The probe enters easily and passes into the above-described hardness. External palpation gives the impression of there being only a moderate thickness between the skin and the point of the probe, not as if there were even the thickness of the abdominal walls plus that of an ordinary unimpregnated uterus intervening. Probe enters six inches and is withdrawn without any trace of blood. Behind the cervix is a rounded hard swelling, possibly a fœtal part; between this and the left abdominal hardness mutual impulse can be felt. Milk in the breasts. The patient left St. Bartholomew's September 28th against advice." Between April and December 1879 she menstruated, but not at the proper times, the intervals being seven or eight weeks. After leaving St. Bartholomew's she was well up till about Christmas, a fortnight before her admission under my care, when she was seized with a pain in the swelling, very sharp and stabbing; this has continued, and has been so severe that she could not sleep. She does not think the swelling is any larger than it was in June last.

For the next few days after admission [into Soho Square Hospital] the patient continued in much the same condition, the pulse small, 150; the temperature high, running up, on the evening of the 17th, to 103.4°, the pain being very severe, and the tenderness and distension of the abdomen continuing. On the 20th my attention was called to a redness the size of a florin, about one inch to the right of the umbilicus, and on a level with it. On the next day this was more marked and the area a little raised, and the poultices were made smaller so as to cover the area and the parts adjacent; the puffiness increased, and by the 26th there was a large prominent swelling like a hen's egg to the right of the umbilicus. This I opened by an incision about one inch in length, and let out about three or four ounces of horribly offensive, dirty-looking purulent fluid, containing *débris*, curdy matter, &c. After washing out with carbolic acid lotion, I passed in the finger, which could be moved round in a cavity of about two inches

radius, and it was clear I had only opened an abscess between the skin and the abdominal muscles; no opening from it could be made out, and no fœtal parts felt. The patient still remained in the same low state, the temperature and pulse much as before, and the stools usually three times a day; the tongue dry, brown, cracked; the breath and general condition most characteristic of septic poisoning. The discharge from the opening continued for several days, the cavity being washed out frequently with carbolic lotion. On February 4th the patient appeared much improved, the discharge was less, and the incision contracting. Whilst syringing on the 7th, bubbles of gas were noticed, and, on a more careful examination and probing, an opening was found at the left lower angle of the cavity, through which a large probe could be passed about two inches, and the dirty-looking purulent matter welled up more freely from below. On vaginal examination there appeared less fulness in the Douglas pouch. On February 12th, at my morning visit, finding the patient had passed a better night, and was somewhat stronger, I made a more careful examination, and passing the probe as before, it grated against what appeared to be rough bone. I then cut downwards through the skin for about one inch the full extent of the cavity before opened, and found the opening through which the probe passed. This aperture was slightly enlarged by a nick of the scalpel, and the little finger, guided by the probe, distended the opening, and passed into a cavity, and the fœtal skull was felt. As this gave the patient a good deal of pain, a little ether was administered, and the opening into the fœtal cyst was enlarged by cutting downwards towards the middle line, through the whole thickness of the cyst and abdominal walls for about three inches; this being done, the head of the fœtus was exposed, the vertex presenting; the overlapping edge of one of the parietal bones was seized with a vulsellum, but the bone came away from its attachments; the other was then seized, and it too came away; the dura mater was then grasped by the forceps, and the fœtus easily extracted, the greater part of the brains being squeezed out as the head passed through the opening. The fœtus was decomposed and horribly offensive. The placenta did not come away with the fœtus; about three inches of the cord was hanging from the umbilicus. No search was made for the placenta; the cavity was washed out with carbolic lotion. On examining the opening made, it was evident that the abscess first opened had been formed through the purulent contents of the cyst working their way by a small opening, at its extreme upper margin, through the abdominal muscular and peritoneal layers, to which the cyst

wall had become adherent, and that the incision laying open the cyst had been made through the abdominal and cyst walls, which were adherent for the greater part of its length, but at the lower part the cyst wall was not adherent, and the finger could be passed for about two inches between the cyst wall and the peritoneum, a few soft adhesions only being felt here and there; this non-adherent part of the cyst wall was stitched to the abdominal wall by two sutures. The cavity was stuffed with two rolls of oakum covered with lint, each about four inches long and two in circumference. They were removed in the afternoon, and the cavity washed out with carbolic lotion; this was repeated in the evening, the discharge being horribly offensive, brownish purulent matter, with much *débris*, and curdy, caseous matter. The fœtus was a male; macerated, decomposed, cranial bones loose, about eight months old, measuring twelve inches.

For the next three days the discharge was very offensive, dirty brown, with broken-down matter in it; the cavity was syringed out twice a day with carbolic lotion and stuffed with lint. The patient's condition improved; the temperature and pulse kept high. On February 18th the discharge looked healthier, still very offensive; the two abdominal sutures removed, and the cyst wall was adherent to the abdominal wall all round. Patient put on calcii sulphidi, gr. ½ 4tis horis. On the 20th the patient was much better, the discharge less offensive and becoming green, and more like healthy pus. On the 23d a large quantity of purulent matter was passed per vaginam, and on syringing the cavity the lotion passed in the same way. On the 25th the wound looked healthy, the upper part, the base of the abscess cavity, skinning over. The patient gained strength, eating well, tongue clean and moist. The cavity is contracting, holding about two ounces, and the area of abdominal resonance enlarging. On the 28th the temperature was high, and some pus was found exuding from a small opening between the cyst and abdominal wall; the wound is healing over and the cavity diminishing. There has been a little discharge from time to time from the vagina. On March 12th the upper part of incision skinned over: the cavity holds two or three drachms; a small mop can be pushed down about three inches to the bottom of the cavity. Patient gaining flesh, though still very emaciated. The temperature 100° at night; pulse 112. By vaginal examination, the uterus fixed in fair position; a thickening felt in the Douglas pouch. On March 25th the opening into the cavity was the size of a threepenny-piece; the cavity is still washed out daily, but holds scarcely a drachm. April 10th.—The cavity is quite filled up, and the opening closed. Patient

allowed to be up, lying on the couch. 17th.—Patient gaining strength; still very weak, walking about a little. The vaginal examination gave the uterus lying central, somewhat enlarged; sound passed forwards three inches; the thickening in the Douglas pouch still to be recognised, and, now that the uterus is fairly moveable, a band of adhesions is felt passing from the posterior wall of vagina to the uterus. Patient to leave the hospital as soon as she is stronger on her legs and admissible to a convalescent home.

Case III.

Jane W., aged 37, admitted July 3, 1879, into "Martha." Married twenty years; two children, the last fourteen years ago; two miscarriages, the last sixteen years ago. Had been a widow ten years, and has married again four years ago. Catamenia began at 17; always regular till three months ago.

Three weeks ago was seized with violent pain in lower abdomen, rigors and vomiting. Thereafter she improved for a fortnight, but four days ago had a similar attack. *Present condition.*—Belly considerably distended. Tenderness over its lower part. Great fulness over brim of pelvis, but no distinct hardness. For an inch above pubes dulness on percussion and almost hardness. *Per vaginam:* Cervix somewhat depressed and pushed forwards. Uterus nearly fixed, surrounded by indefinite hardness and tenderness. No constitutional disturbance.

Lying in bed she improved much. Once had urine removed by catheter. Discharged on July 31.

Readmitted October 1, 1879, with the following history:—The day after leaving the hospital she was taken with pain in the left side of the abdomen and in hypogastrium. These pains have been increasing ever since, and she now has pains like those of labour. The bowels are confined. She has to press the hypogastrium with both hands in order to pass water. The breasts are large and contain milk.

Lower half of abdomen occupied by prominent swelling, which has feeling and appearance of a six months' pregnancy. One inch above umbilicus resonance begins, and extends laterally into both flanks and down to spines of ilia. *Per vaginam:* Cervix uteri felt behind horizontal ramus of left pubic bone, a soft tumour descending into pelvic cavity nearly filling its upper part. *Per rectum:* Nothing farther made out.

From this time to October 20 the urine was drawn off, after which she passed it. Abdominal size or distension diminished a

pregnancy advanced, from a girth of 37 inches on October 2 to a girth of 31¾ inches on January 13.

On October 7 the note is made that she still fancies she feels something moving in the abdomen.

Oct. 31.—Passed tapeworm, Bothrio cephalus latus.

Nov. 10.—All measurements little larger; constant pain in the lump.

Nov. 17.—About 1½ inch internal to left anterior superior spine of ilium a faint sound can be heard, 148 to the minute; maternal pulse at same time 92. Shortly after the *fœtal heart* was heard beating, 164 in a minute, near same spot.

Nov. 18.—Ballottement made out per vaginam.

Dec. 4.—Cervix felt behind upper margin of symphysis; has no vaginal portion. A hard projecting mass occupies upper part of pelvic excavation behind cervix.

Dec. 5.—Severe pain at lower part of stomach.

After this no fœtal heart could be heard, nor did the patient feel any movements.

From January 1 till she left the hospital, there was chocolate-coloured discharge from the vagina.

Jan. 15.—*Per hypogastrium:* Tumour certainly more prominent, projecting much more on left side. Uterine souffle still heard in neighbourhood of external inguinal ring. *Per vaginam:* No change.

Patient discharged January 25, 1880.

Patient came to hospital February 22, 1883, to be examined (three years after dismissal). Menstruation regular, rather scanty, unattended by pain. Loses blood occasionally from rectum (hæmorrhoids). Has no discharge whatever. Pain in left iliac and lumbar region when she does hard work; not worse at menstrual periods.

Abdomen not distended. Thick adipose layer. In left hypogastric region is found fixed round hardness size of large hen's egg, not tender.

Cervix uteri displaced slightly to right by irregular hardness to left, which is continuous with that felt in hypogastrium, and is only slightly displaceable bimanually, the uterus moving with it.

Case IV.

Elizabeth W., aged 31, admitted January 10, 1883. Married nine years; had two children, last fourteen months ago. One miscarriage. Catamenia began at 11; never regular till marriage. Last natural period five months ago. Two months ago she passed some large clots. The loss continued slightly for

six or seven days, and she remained in bed fourteen days. She complains of a lump in the hypogastric region, which she first noticed two months ago. It was then so small that she could not always be sure it was there. It was originally near the left iliac region, but has steadily grown towards middle line and across it. It was at first painless, but has lately caused aching pain, for which she seeks relief.

Jan. 11.—Belly slightly uniformly distended, as it might be by a five months' pregnancy, and in the hypogastric region is felt a tumour closely resembling a five months' pregnant uterus in every respect, except that it has a left lateral obliquity, and is more fixed than natural. On the right side of the tumour low down is an ill-defined rounded mass, which moves slightly independently of the main tumour. The cervix is just behind the upper margin of the symphysis and to the right, and behind it and apparently connected with it and with the hypogastric tumour, is a rounded somewhat tender irregular surface. Cervix slightly patulous and softened. Probe enters easily $3\frac{1}{4}$ inches into the moveable mass to the right of the main tumour. Mucous membrane of vagina and vestibule mauve-tinted. Breasts not at all characteristic of pregnancy. Fœtal heart heard in left part of tumour, beating 135 to 140 in a minute.

Jan. 17.—See Dr. Steavenson's notes.

Jan. 18.—At 2 P.M. xxiv. minims of the liq. morph. hypoderm. (gr. ij.) were injected into the amniotic cavity (by mistake for liq. morph. hydrochl.), the point of the needle of the syringe being considered to be almost free in the fluid. The patient experienced no ill effects, the pulse remaining at 96, and pupils not contracted till an hour after, when she began to feel drowsy, and the pupils became slightly contracted. It was thought advisable to draw off the liquor amnii, which was done through the abdominal wall by the aspirating trocar. Eight fluid ounces of liquor amnii were removed, rather dark in colour and not quite clear. It was tested for acetate of morphia, but the reactions were unsatisfactory owing to the presence of albumen. When this was precipitated by heat, the filtrate, on being evaporated down, gave the characteristic green colour with strong sulphuric acid and a crystal of bichromate of potash, but only faintly.

The patient suffered no further inconvenience from the morphia.

Jan. 19.—Patient thinks she feels movements of fœtus. Fœtal heart counted 140. Maternal pulse 88, regular.

On the 20th a small quantity of dark brown, not offensive, discharge came from the vagina, and it ceased on the 21st.

Jan. 22.—Little tenderness over body of uterus. Fœtal heart 160. More pain in left half of tumour. Temperature normal.

Jan. 23.—Dr. Duncan injected into the *body of the fœtus,* as well as he could, ℥iij. of the hypodermic solution of morphia (gr. ¼) with an equal quantity of water. Though this was done just over where the fœtal heart was heard plainest, and to the depth of two inches, no effect was produced on the fœtus. The patient half-an-hour after began to complain of severe gnawing pain about the umbilicus and great tenderness over the same part. This subsided in about two hours. The pupils were not affected.

Jan. 24.—Slept well; no pain or tenderness in abdomen. Fœtal heart 156. Temperature normal.

Jan. 25.—Another injection of a solution of a quarter grain of morphia was made into the fœtus in the same manner as on the 23d, but without any effect on the fœtus. No abdominal pain followed, nor were the pupils contracted. Temperature and pulse not raised.

Jan. 27.—Morphia (gr. ½) injected per vaginam into the fœtus, but with no effect. Pupils not contracted. No constitutional disturbance.

Jan. 29.—Fœtal heart 164, to right of middle line. For the last week the patient has been complaining of ever-increasing pain in one iliac region or the other, chiefly the left, but she sleeps well at night. The uterus is larger. There is a little tenderness over the left side of the tumour.

Jan. 30.—Fœtal heart 164. See Dr. Steavenson's notes.

At 6 P.M. the fœtal heart was counted 168 about the middle of the tumour just under the punctures. The pain of which the patient has complained lately was much aggravated after the operation, so that at 6 P.M. morphia gr. ⅙ was injected hypodermically. This gave relief.

10 P.M.—P. 80. T. 98°.

Feb. 1, Thursday.—Slept fairly. Still some pain, not so bad as last night. Fœtal heart 166.

Feb. 2, Friday.—Fœtal heart 160. Fundus uteri on level of two inches below umbilicus. Temperature, M. 98. E. 98.4°.

Feb. 3, Saturday.—Dr. Duncan having heard the fœtal heart, drew off the liquor amnii with the aspirator, and then injected ℥ xiij. of equal parts of water and liq. morph. hypod. into the fœtus just over where the heart was heard. In this, as in the other cases, he was satisfied that the needle pierced the fœtus.

The fluid drawn off was ℥iv. in quantity, thick and bloody, rather viscid, without clot, and containing a considerable (℥ss) sediment of pus. Under the microscope a large number of very minute free oil globules were seen, as well as pus cells, which themselves contained oil. The fluid was odourless.

11 P.M.—No pulsations of the fœtal heart have been heard since the last operation, though different observers have listened on

several occasions. The pupils are now slightly contracted, though they were not so an hour after the injection.

Feb. 4, 9 A.M.—Had very little sleep, feeling ill all night. She was seized with sudden sharp pain in left inguinal region at 8 A.M., after a slight movement. She vomited shortly after, which increased the pain, and the temperature was found at 8.30 to be 102°, having been 98.4° at 6 P.M. the night before. The pain subsided, but returned two or three times during the morning with less severity. Abdomen not tender to slight pressure; is resonant everywhere, except the right quarter of the tumour. Pulse, 124. Resp. 36. The pulse is regular, fairly soft and full.

11.30 A.M.—Ten minims of tinct. op. given at 10 A.M. Abdomen resonant all over. Urine natural. Pulse, 120, full, soft; regular, except for an occasional intermission.

3 P.M.—Dr. Duncan, considering the amniotic cavity contained gas formed either by decomposition or communication with the bowel, put in a trocar and cannula through the abdominal wall, and let off a considerable quantity of gas strongly resembling in smell sulphuretted hydrogen. The prominence receded about half an inch.

6.30 P.M.—Patient now looks much worse; in cold sweat; pulse 136, small and compressible; occasionally imperceptible for several beats together. Morphia gr. $\frac{1}{6}$ injected at 1 P.M. gave no relief from the excessive hypogastric pain. She now complains of tenesmus, the abdominal pain having partly subsided. Morphia gr. $\frac{1}{6}$ injected again in spite of contraction of the pupils. Tumour very tense. Trocar used again with same effect as before, without relieving pain.

From this time to her death at 12.50 P.M. the following day, Feb. 5, she gradually became weaker. The temperature, which had been falling since 9 A.M. on the 4th, reached 96° before death. The mind remained clear, and she took interest in the surroundings to within two hours of death. No fresh symptoms arose.

Post-mortem, made by Dr. N. Moore twenty-six hours after death.—Only the abdomen examined. Body well nourished. Abdominal wall $1\frac{1}{4}$ inch thick; slight general peritonitis; intestines loosely adherent and dusky. Occupying the brim and cavity of the pelvis and hypogastric region is a large globular cystic mass, dark in colour, its anterior surface smooth and free from adhesions, crossed obliquely from above downwards by a thin flattened cord, probably round ligament. Some convolutions of small intestine firmly adherent to the upper surface, and in front of these omentum. The cyst extends behind the enlarged uterus to its middle, that organ forming a small part of the anterior and a large part of the right lateral boundary of the cyst. In the remaining

half of Douglas' pouch is the smooth right ovary with its Fallopian tube convoluted and fixed by adhesions. The remains of the left Fallopian tube apparently cross from right to left the upper convex boundary of the cyst.

The *uterus* was laid open, its cavity measuring four inches and walls thickened. Its mucous membrane is thick, forming decidua vera about $\frac{1}{8}$ inch thick; it is separated for about an inch above the internal os, and hanging into the cervix with a coagulum attached to its lower extremity, forming a false polypus. The cervix contains much thick mucus, its mucous membrane villous. Around the os externum is a fringe of enlarged Nabothian glands.

The *cyst* wall is a quarter inch to a half inch thick, composed of layers of fibrous tissue, enclosing large blood-vessels, lined on its inner surface by a thick chorion and a layer of a kind of decidua. The *placenta*, 4 inches in diameter, is attached to the left end of the cyst more behind than in front. Behind the fœtus, in the right side of the cavity, is a large blood clot, about v.

The *fœtus* is 9 inches long; all the soft parts, except those in the hands and feet, are as if completely macerated, with the chief part of each bone bare. Some muscles still attached, but the whole integument has disappeared, except that of the hands and feet, which is intact and natural both on the dorsal and palmar surfaces. Almost all the internal organs are diffused in the surrounding fluid, or so soft as to be easily washed away. The heart hardly recognisable; dura-mater separated from the bare bones of the skull, enclosing a softened brain.

When the cyst was first punctured, its walls collapsed considerably, owing to the escape of gas. The contents were very fœtid; the fluid could be described as a reddish-brown grumous mess.

Notes by Dr. Steavenson.

Jan. 16.—It was decided to try and kill the fœtus by electricity.

Jan. 17.—The patient having been placed on a couch in the operating theatre, and under the influence of ether, an electrode shaped like an œsophageal bougie, made of gum-elastic, with a nickel-plated end, was passed into the vagina and towards the left side, and connected with the negative pole of the battery; and a carbon disc electrode on an interrupting handle was placed over the tumour on the left side, and a medium current (but as strong as the faradic coil in a Coxeter's combined battery would give)

was passed for the space of two seconds, and stopped for longer intervals alternately, for about a minute and a half. The abdominal muscles were thrown into strong contractions, and the legs moved by induced contraction of their muscles, but no evidence of suffering was given by the patient, although, without ether, the pain produced by the faradic current would have been unbearable. There was a slight quickening of the pulse. The faradic current was then stopped, and a continuous current of forty modified Leclanché elements was passed for a space of six minutes, producing slight vesication of the skin over the tumour, and a rough dried surface in the vagina where the metal end of the bougie had rested, showing that the current had acted as a caustic on the vaginal walls. This roughened patch was on the posterior wall of the vagina, therefore the electrode must have slipped somewhat from its original position. The nickel-plated end was on removal found much discoloured.

No conclusion could be immediately arrived at as to whether the desired object had been obtained, for the fœtal heart could not be heard; but it could not be heard just before the operation was commenced. The result would have been unsatisfactory in one particular, had it been successful, as we should not have been able to say whether the fœtus was destroyed by the faradic or galvanic current.

Jan. 18.—Fœtal heart heard beating last night and this morning.

The reasons which induced me to believe that a fœtus could not be killed by an electric shock without endangering the life of the mother were these:—a fœtus, like the lower animals, is more tenacious of life than a more highly developed being: that while a powerful electric shock causes the death of an adult by its stimulation of the inhibitory fibres of the pneumogastric, a fœtus has no inhibitory apparatus. The development of the medulla oblongata takes place, according to Quain, in the following order: restiform bodies, 3d month; anterior pyramids, 5th month; olivary body, 6th month; fasciolæ cinereæ of fourth ventricle, 4th or 5th month; white striæ of fourth ventricle, not until after birth.

It was decided now to try and destroy the fœtus by galvano-puncture.

Several cases of extra-uterine fœtation had been treated before in this way, but with doubtful success.

Jan. 30.—The patient having been placed under the influence of ether, two electrolysis needles, insulated to within half an inch of their points, were introduced into the tumour. The fœtal heart could be heard loudly pulsating before the operation was commenced. The needles were passed in for an inch and a half,

and connected with the negative pole of a battery composed of modified Leclanché elements. A carbon disc-shaped electrode connected with the positive pole was applied over the tumour externally, and a current from forty cells of the battery passed for six minutes with occasional interruptions. On withdrawal of the needles, it was found that some of the shellac by which they were insulated had been removed from them. After the operation the fœtal heart could still be heard beating, but more slowly.

Two cases of extra-uterine fœtation treated by electricity are recorded by Drs. Beard and Rockwell. In both cases the fœtus was supposed to be in the Fallopian tube. In both cases the object in view was to destroy the fœtus with the hope that it might to a certain extent be absorbed and encysted. In the first case a thirty-six celled galvanic battery was used. A sponge electrode was passed into the rectum and placed just behind the fœtal mass; then a broad sponge electrode was placed on the abdominal wall over the mass and pressed down, the patient lying on her back. A gentle current was passed; the patient soon became accustomed to this, and it was gradually increased until seventeen cells were in use (zinc carbon cells were used, which have a weaker electro-motive force than the Leclanché cells). The application was continued for five minutes. Frequent interruptions were made. The muscles of the abdomen and limbs were somewhat violently contracted. No anæsthetic was employed.

The next day the current was again passed, commencing with eighteen cells and increasing the number up to twenty-three. This application occupied three and a half minutes. Very painful contractions of the muscles were excited, and opium had to be used to ease the pain. The pulse was also increased in frequency, as in our case. The next day the fœtus was expelled through the uterus and vagina.

In the second case recorded by Drs. Beard and Rockwell the patient was in the eighth week of tubal pregnancy. The galvanic current was used, and was followed by the evident death of the fœtus; but they were not able to record the ultimate result of the case at the time of the publication of the last edition of their work, nor have I been able to ascertain the result from other sources.

In the "American Journal of Obstetrics" for October 1883, Dr. T. G. Thomas of New York read a paper before the American Gynæcological Society entitled "Notes of Twenty-one Cases of Extra-Uterine Pregnancy." In the course of his remarks upon

treatment in these cases he said, that if the condition be diagnosed before the end of the fourth month of gestation, he would destroy the vitality of the child by electricity in preference to all other methods which have been proposed.

This paper was followed by one of Dr. Garrigues of New York, with special reference to the treatment of extra-uterine pregnancy by electricity. In the case he mentioned, which had been under his own observation, a one-celled French battery was employed. "The applications were made daily, and each sitting occupied ten minutes. Ten applications were made, when the tumour was positively reduced in size and the patient seemed well. During the application of electricity she had not been in bed a single day, but had gone out and been able to attend to the duties of her small household." He thought that treatment by electricity was perfectly safe as compared with other methods. He said it never caused rupture of the cyst, and that it was reliable up to the middle of the fourth month, having been successful in every case in which it had been employed, and that experience had proved electricity to be an efficacious and safe agent for arresting extra-uterine pregnancy, especially during the first three months.

During the discussion which followed, Dr. H. P. C. Wilson of Baltimore related a case of his own of extra-uterine pregnancy, in which he used electricity after gestation had reached two and a half months. He placed one pole upon the tumour in Douglas' *cul-de-sac*, and the other above the pubes. The application was continued for six or eight days, until the tumour was evidently diminished in size, and it finally disappeared. The woman recovered and is still living.

Experiments to ascertain the Effect of Electrolysis on a Fresh Dead Fœtus.

We thought it would be interesting to find what effect electrolysis would have upon a fresh dead fœtus, and whether it would justify us in considering that the condition found post-mortem in the case here recorded could be ascribed to that agency.

A quite fresh, dead, male fœtus of six months was immersed in water at the temperature of 99°, to which had been added a small amount of chloride of sodium, for the double purpose of making it more resemble the liquor amnii, and because a solution of salt and water conducts electricity better than pure water.

Five electrolysis needles connected with the negative pole of the constant-current battery used in the preceding case were passed about half an inch into the chest of the fœtus, and the electrode in connection with the other pole (+) of the battery was placed in the water. A strong current from forty cells was allowed to pass for ten minutes. At the end of this time an emphysematous bulla was found round each needle, chiefly in the areolar tissue, crackling under digital pressure, and evidently containing gas. A round patch on the skin was produced at the place of entrance of each needle about the size of a fourpenny piece, showing evident destruction of the skin to that extent. In life it would probably have resulted in a slough, which no doubt would have spread.

On opening up the tracks made by the needles, a small amount of gas escaped, and the sides of the tracks showed the caustic effect of the electricity, but were not destroyed to such an extent as was the skin. The same result was obtained when the needles were thrust into the thigh. Another experiment was made in the same way several months later on another fœtus, and yielded similar results. It was evident that the skin, which offers more resistance to the passage of electricity, was destroyed to a greater extent than the other tissues; this was also most noticeable in the case of the fœtus we tried to kill; and very possibly the electrolysis was also responsible in the first instance for the presence of gas in the cyst, by the development of hydrogen about the ends of the needles. The presence of gas once established, no doubt tended to its increase as decomposition progressed.

Remarks by Dr. Matthews Duncan.

In the history of Case IV. it will be found that the first drawing off of the liquor amnii had no apparent effect on the life of the fœtus; and this is important, the drawing off being effectual and complete; for it is a method of destroying the life much recommended. That it might not succeed, one was prepared for by other failures in like circumstances, and by the failure of tappings even twice repeated in cases of hydramnios near the full time to do any harm to the fœtus. In Case IV. the tapping failed to destroy the child, even when combined with morphia injection.

The failure of morphia injections to kill the fœtus of this case is also very striking, for it was on one occasion injected in the great dose of two grains. This injection was intended to, and certainly did, enter the amniotic sac. Other injections of mor-

phia into the fœtus were without doubt effectually done, but without much disturbance of it, except, perhaps, by the last. This result is at first difficult to receive, for one knows the extreme susceptibility of the child to this drug; and it may be that the impunity of the fœtus arises from its having no need of pulmonary respiration.

The slowness of the supervention of narcotism of the mother when the morphia was in the liquor amnii will be remarked, and its arrest by withdrawing the fluid containing the injected morphia. When the morphia was injected into the body of the fœtus, no constitutional maternal effect was observed, except in one instance, when narcotism was discovered eight hours after the injection of $1\frac{1}{12}$ grain into the fœtal body. This slowness of coming on of narcotism after injection into the fœtal body greater than after injection into the amniotic cavity is what one would expect from the evident circumstances of the injections. No doubt the fœtus died after, and possibly immediately after, the last injection of morphia into its body; but it must be remembered that that was after other injections had failed, and after other means of slaying it had been used—means which certainly injured it most severely.

We now consider the effects of electrolysis, and its inefficiency in destroying life; and we may preliminarily call attention to, and contrast the disappearance of life in, Case I., without any noticeable cause, or only a possible and slight one. Compared with this, we have here, in Case IV., maintenance of life after tapping, after morphia injections, and after electrolysis. No doubt at last the fœtus of Case IV. did die or was killed, but no satisfaction can be felt in any respect as to the desiderated action of the means used; and it is to this instructive and interesting observation that we now call attention. All these means were used, and repeatedly, before the fœtus did die.

The appearance of the fœtus *post-mortem* shows that the electrolysis had tremendous effect upon it, and its survival is most marvellous. The *post-mortem* was little more than two days after its death. The destruction of its tissues did not at all resemble that seen in the ordinary course of putrefaction—the bones extensively laid bare, the skin and great part of the tissues having been dissolved and having disappeared; and, showing that this was due to the electrolysis, there were parts uninjured, the skin entire as in a fœtus only dead two or three days. Yet during most of this destruction the fœtal heart continued to beat, apparently undisturbed, except as to frequency of pulsation.

A CASE IN WHICH

A POCKET-KNIFE REMAINED FOR SEVEN MONTHS IN THE POST-PHARYNGEAL TISSUE.

BY

THOMAS SMITH.

A patient, aged 62, who at the time this account commences was not responsible for her actions, succeeded in secluding herself from her attendants for a short time; when discovered, she stated that she had thrust her pocket-knife down her throat, having first wound a piece of cashmere around one of the blades, so as to prop it open to a small extent, "that she might choke herself."

Her nurse informed me that the patient complained of pain in her neck, and that she frequently rubbed the left side of her neck and throat from above downwards.

About three hours after the knife was supposed to have been swallowed, Dr. Sutton of Dover saw the patient, and has kindly given me the following account:—

"When I was called to this patient, I carefully manipulated the œsophagus and its surroundings externally without finding any enlargement. I attentively examined the fauces, and there was a slight incision through the mucous membrane and the prominent fibres of the palato-glossus muscle on one side. This wound I thought had been made by the patient in an attempt to swallow the knife when quite open, which she confessed to me she had tried to do.

"I passed a large soft metallic bougie several times to within a few inches of its whole length down the œsophagus without meeting any obstruction, and without its communicating any sound to indicate its contact with a solid body; and I came to the conclusion that, if the knife had been swallowed, it must have passed into the stomach. This view I thought at the time was somewhat confirmed by the patient, who, in reply to my

inquiry, stated that she felt the knife pass at a point agreeing with the position of the cardiac orifice of the stomach.

"I am of opinion that, after the lengthened and solicitous examination I made, that had there been any projecting part of the knife either in the pharynx or in the œsophagus, I must have felt it; there was visibly no projecting part in the fauces. If the knife had been pushed through the walls of the tube, it had certainly been forced either by the patient's fingers or by the muscles of deglutition quite out of the canal, and into such a position as not to allow of its detection by the most careful external and internal examinations.

"The patient was in no particular pain when I first saw her, with the exception of slight suffering from the wound in the side of the palate; and next morning when I visited her, she was apparently comfortable."

A day or two later, owing to Dr. Sutton's absence from Dover, the patient came under the care of Dr. Colbeck, to whom I am indebted for a continuation of her history. She complained of some soreness of the throat and a slight difficulty in swallowing. She was restless and excited, but there was no constitutional disturbance.

After three days a swelling began to form in the upper part of the left side of the neck behind the sterno-mastoid; there was increasing difficulty in swallowing, and a good deal of viscid mucus was discharged from the mouth; there was no marked constitutional disturbance.

Two days later there was increase in the external swelling and in the difficulty in swallowing; the discharge from the mouth had become most offensive; it was larger in quantity, and was mixed with pellets of sloughy matter.

At this time a careful examination in the neck failed to detect the presence of the knife, which Dr. Colbeck suspected might be there. The swelling and other symptoms being relieved by fomentations and a gargle containing Condy's fluid, it was considered probable that these symptoms arose from injury to the throat and the consequent inflammation.

Eleven days after the attempt to swallow the knife, the patient was seen by Dr. Astley in consultation with Dr. Colbeck; the swelling had then much decreased, the offensive discharge was considerably less, and it was thought extremely unlikely that so large an object as the knife was alleged to be, could be lodged anywhere in the tissues of the neck. Moreover, it may be observed that during the whole time fluid nourishment could be swallowed, though with some difficulty.

Three weeks after the supposed introduction of the knife, this

patient came under the care of Drs. Warwick and Burn of Richmond, who kindly inform me that at that time the swelling in the neck was scarcely perceptible; that great difficulty was experienced in swallowing solids, and that the patient complained of constant pain across the back of the neck just above the last cervical vertebra. The neck was stiff, and its movement, or rather want of movement, was such as is observed in disease of the cervical spine. There was no cough except when she had a choking fit; there was free expectoration of frothy mucus, occasionally slightly blood-stained and sometimes very offensive. The expectoration was not coughed up, but came after clearing the throat.

During the next two months the patient remained in much the same condition, the expectoration rather increasing in quantity and general emaciation advancing.

Eleven weeks from the time of the introduction of the foreign body I saw her with Dr. Warwick and Dr. Burn, and in addition to the symptoms already mentioned there was to be noticed on the left side of the neck, nearer to the clavicle than the jaw, a slight fulness scarcely amounting to a swelling; the soft parts felt here harder than on the opposite side; the pain was still complained of in the back of the neck, and also in the lower part of the neck on the left side in front. The expectoration was more copious, and there was some cough. The larynx moved freely, and the most careful external examination failed to detect the presence of a foreign body. It was thought that the lower part of the larynx inclined over to the right side. The patient was recommended to submit to an examination extending to the pharynx and œsophagus, as it was considered probable that the knife was lodged somewhere in the neck; at all events, it was thought the likelihood was sufficient to justify a thorough examination. To this the patient would not submit, so that nothing farther was done until fifteen weeks later, when, with the consent of the patient, chloroform was administered and a thorough examination made.

At this time, as before, solids could not be swallowed; the expectoration was more profuse and more offensive, emaciation was greater, pain was more decided in the left supra-clavicular space, and the larynx more evidently deviated towards the right side. A probang was passed more than once into the stomach, and a careful examination of the fauces and upper part of the pharynx was made with the finger, under the full conviction that the knife was somewhere in the tissues of the neck; but neither within nor without could any tangible indication of its presence be detected, the only objective symptoms being the very slight

swelling in the left supra-clavicular space, and the deviation of the air-tube to the right side. Dr. Brown informs me that the size of the cervical swelling varied considerably from week to week, but when seen by myself, it might have passed notice under a superficial examination.

We came to the conclusion that if the knife had been introduced, it must be lying altogether outside the gullet, and that no part projected either into the cavity of the pharynx or œsophagus. The possibility of some malignant ulcerations was entertained, giving rise to the difficulty in swallowing and the offensive expectoration.

The patient's general strength slowly declined, and seven months after the knife was introduced she suddenly brought up both blood and offensive pus (about three or four ounces), and three days later she was attacked by hæmorrhage, which was almost immediately fatal.

The *post-mortem* examination was made by Dr. Samuel West, who was good enough to supply the following particulars.

The left side of the neck was slightly swollen, and was dense and hard to the touch. From the clavicle to the angle of the jaw the tissue was matted together; on dividing this, a cavity was opened containing some pus and altered blood, and in the bottom of this, lying flat against the spine, its long axis being parallel with the spine, was the knife. The cavity was only a little larger than the knife, and had upon its inner side the trachea and œsophagus, which were displaced slightly towards the right side and fixed by adhesions; along the outer side ran the carotid artery, and around the lower end of the cavity the artery curved sharply inwards, being at this point pressed upon by the knife; and here it was that an ulcerated opening about a quarter of an inch in diameter existed in the vessel. The upper end of the cavity communicated with the pharynx by a slit-like opening on the left side behind the posterior pillar of the palate. The opening was large enough to permit, with a little pressure, the passage of the knife.

During the last two or three months of this patient's life little doubt existed that the knife was embedded in the tissues somewhere external to the pharynx or œsophagus. From the swelling such as it was, in the lowest part of the neck, and the negative result of examination under chloroform, it was conjectured that the place of lodgment was either at the root of the neck or about the upper part of the thorax.

No importance was attached to the patient's own statement, often reiterated, that she felt the knife in her abdomen.

Had one known the exact position of the knife during life, I

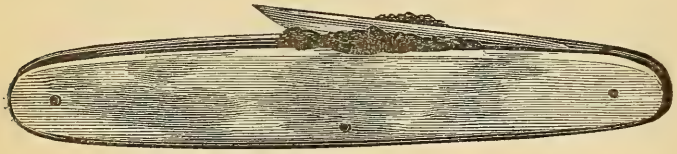
doubt if it could have been recognised by tactile examination through the pharynx, so closely did it lie against the spine in a bedding of lymph, which rounded off its sharp corners and edges, and obscured its characteristic outline. Its position quite accounted for the stiffness of the neck, which was a marked feature in the case.

It is obvious that the patient's own account of her attempt to thrust the knife down her throat was correct, and also clear that she did not succeed in the attempt, but that she thrust it through the outer part of the soft palate, where a wound was observed by Dr. Sutton, and forced it outside the pharyngeal cavity.

It is probable that by the frequent rubbing of the side of the neck the knife was gradually pushed into the position against the spine, where it was found after death.

At the time when I first saw the patient, the wound in front of the palate had entirely healed. The discharge and fatal hæmorrhage took place from the opening in the pharynx behind the posterior pillar of the fauces, which was disclosed at the *post-mortem* examination.

The accompanying woodcut represents the exact size and shape of the knife, and the position of the blade, propped open, so as to act as a barb.



A CASE OF PYÆMIA,

CONSEQUENT ON AN ABSCESS FORMED AFTER THE IMPACTION OF A SET OF ARTIFICIAL TEETH IN THE PHARYNX,

WITH

REMARKS ON THE IMPACTION OF FOREIGN BODIES IN THE PHARYNX AND ŒSOPHAGUS, AND ON THEIR PASSAGE THROUGH THE STOMACH AND INTESTINES.

BY

W. S. CHURCH, M.D.

The very general use of false teeth, whilst doing much to relieve the discomfort and preserve the health and appearance of the wearers, has added another risk to the many by which, even in our present high state of civilisation, human life is surrounded. The risk of death consequent on wearing false teeth is certainly not a very serious one, but it is perhaps less considered than it should be by those whom age or accident has compelled to supplement nature by art.

As a proof that this risk is a reality, and that death sometimes ensues so rapidly that there is no opportunity for surgical interference, I will mention the two following cases, in which death occurred without a suspicion of the real cause, until it was revealed at the *post-mortem* examination :—

Mr. Pollock's Case, published in the Lancet, April 3, 1869.—A young man was brought in dead to St. George's Hospital on August 16, 1862. He was stated to have been running, when he stumbled and fell to the ground. As he did not rise, he was supposed to be in a fit, and was conveyed to the hospital.

At the *post-mortem* examination, when the finger was passed into the pharynx in order to take out the adjoining structures, an irregular hard mass was felt lying upon the epiglottis. This proved to be two false teeth. There can be no doubt that in this case the plate became dislodged, and fixed by its sharp

points in the pharynx, and pressing on the glottis, produced immediate suffocation.

Another instance I take from the *Times* of June 1, 1882:—

"Yesterday afternoon Mr. W. H. Carrington held an inquest at the Council Chamber, Portsmouth, on the body of Mr. John Forbes Calland, who had been residing at Southsea for eighteen months, who was drowned from a bathing-machine on Southsea beach on the previous day. Captain Calland, 3d Battalion Welsh Regiment, stated that his father, the deceased, was 72 years of age. On the previous day he bathed off Southsea beach, and was found shortly after lying on his face in the water. On his body being examined, it was found that his false teeth had been displaced and had blocked his windpipe, accelerating his death, which was caused by drowning." It appears to me that the false teeth were the cause of the drowning. They were probably drawn into the larynx by the deep inspiration caused by entering the cold water, and so gave rise to choking; water entering the mouth and lungs afterwards.

Mr. Cock's prophecy in 1858—"As, however, the use and application of artificial teeth is daily on the increase, and is now universally adopted in all ranks and conditions; as, moreover, many of these succedanea are badly made, imperfectly fitted, and carelessly worn, there can be but little doubt that the casualty [swallowing them] which induced me to perform a severe and perhaps dangerous operation will occur again and again,"[1]—has been amply fulfilled, and many cases of the swallowing of false teeth, of their passage through the stomach and intestines, of their impaction in the pharynx or œsophagus, and subsequent removal, have been recorded. In 1877 Mr. Weiss read a paper before the Odontological Society, entitled "A Summary of Cases where Artificial Teeth have been Swallowed, or have become Impacted in the Pharynx," and since that date numerous instances of this accident have been published in the medical journals.

I am not aware, however, that any case has yet been published similar to that about to be related, although it seems to me probable that the sequence of events in a case reported from the coroner's court at Liverpool[2] in the year 1877 was similar to those met with in the present instance:—

"An inquest was held by the Liverpool coroner on Saturday on the body of a middle-aged woman named Maria Shuker, a domestic servant at Wrexham. About a month ago she went to the Liverpool Infirmary, having swallowed a set of false teeth

[1] Guy's Hospital Reports, 3d series, vol. iv. p. 217.
[2] Daily News, March 19, 1877, quoted from Mr. W.'s paper.

in her sleep. Owing to the plate breaking, the teeth had lodged in her throat, and were removed by an operation; but an abscess having formed, she died on Friday last. The jury returned a verdict accordingly."

In the following case, the impaction in the gullet of a set of false teeth *for a very short time* led to fatal results, although, as will be seen from Dr. Garlick's letter, no difficulty was experienced in extracting them.

Margaret C., a young woman, aged 21, was admitted into Elizabeth's Ward on April 3, 1882, shortly before my visit to the ward. She was obviously very ill—so ill and exhausted that one did not like questioning her at any length, and it was with difficulty that we obtained some account of her illness from her.

She stated that she had been ill some time, and had had a large and painful swelling in her throat, which had disappeared; she did not at first state anything about the accident, but before the end of my examination she told me that her teeth had stuck in her throat.

She was suffering from dyspnœa, and had pain in the chest. An examination of her chest showed that she had some pleurisy and congestion of the lungs. There was considerable diarrhœa. In front of the throat, at the level of the cricoid cartilage, the skin was wrinkled and the tissues felt boggy, but there was no œdema or actual swelling present.

Her temperature was 103°, her pulse rapid, and general appearance and condition left little doubt in my mind that she had pyæmia. She passed a bad night, the bowels remaining very relaxed; respirations laboured. She died in the course of the next day.

Notes of the Post-mortem Examination of the Body by Dr. Ormerod.

Body well nourished, swelling and discolouration of the front of the neck.

Abdominal viscera normal.

Ecchymosis on the anterior part of the left pleura. No fluid in the pleural cavities, but recent dirty-looking lymph sticking to the visceral pleuræ at bases. Lungs much congested at both bases; there were also some small patches of consolidation, breaking down at their centres.

In the neck was a large abscess filled with sanious matter, situated beneath the deep fascia, and reaching downwards as far as the insertion of the first costal cartilage with the sternum

on the right side. The bone and cartilage were both eroded. The abscess extended backwards behind the trachea. After removing the pharynx and trachea and opening the former, a small hole was seen about a quarter of an inch in diameter, on the surface of which was a small blood clot. The hole was situated an inch to the left of the middle line of the back of the pharynx, about the level of the arytænoid cartilages.

I subsequently obtained the following particulars, partly from her sister and partly from Dr. Garlick. The plate to which the teeth were attached was a vulcanite one, and had been worn for some time, and had become worn or broken along its posterior edge. The accident happened on the night of the 22d of March.

When the teeth were extracted they were covered with blood; she did not complain of her throat until the evening of the 23d, when she first said it was sore and hurt her to swallow. On the 24th or 25th (the sister was not quite sure which day) she had shivering, and seemed very ill on the 26th, and went the following day to consult a doctor. The throat became very painful and greatly enlarged, and she had much difficulty in swallowing. She was too ill to go to see a doctor, and after some days was seen by Mr. Gould, and advised to apply at the hospital. In reply to my inquiries, Dr. Garlick has been kind enough to send me the following particulars:—

"Some weeks ago I was called up at night to remove some false teeth from the gullet of Margaret C. The account given me was that she had awoke in the night, found something in her throat, and in the half-waking state pushed it down with her finger.

"To the best of my recollection, this happened about three hours before I was called; she was then retching violently from emetics that had been given by the friends. The teeth could be reached with the tip of the fore-finger, and were removed without difficulty beyond that experienced in grasping them with the forceps; there was no bleeding of consequence after. I saw nothing of her after, and concluded she was well, as the friends never called on me again."

I am also indebted to Dr. Garlick for a description of the plate and teeth attached; for the poor girl, before coming to the hospital, got up one evening and threw the plate into the fire. Dr. Garlick thus describes the plate:—

"It was a palate plate of vulcanite, bearing about three front teeth; the plate had been broken along its posterior edge, causing it to fit badly, and hence the accident. The plate, or rather the remainder of it, was of square shape, and something over an inch in measure along the side. I remember also from

one part a blunt-pointed piece of metal, the size and shape of a common pin, projected about the sixth of an inch. The plate might have been larger than the estimate given, but was probably under 1½ inch in linear measurement. The broken edge was straight, and did not increase the danger of it as an impacted body. The thickness of the plate was about one-tenth of an inch."

The sequence of events is here clear enough. A broken and ill-fitting plate becomes dislodged during sleep and falls back into the pharynx, causing the girl to awaken with a feeling of suffocation. She pushes it whilst half-awake and half-asleep lower down the throat, and the plate becomes impacted just about the level of the larynx. Emetics are administered by the friends, and the violent retching very probably caused the blunt-pointed piece of metal at the end of the plate to lacerate the wall of the œsophagus, as when removed by Dr. Garlick the plate was covered with blood. The injury done to the œsophagus led to the formation of an abscess in the neighbouring parts, and this was followed by pyæmia and death.

A very similar case occurred at the hospital this year, and I am indebted to Mr. Savory for permission to publish the notes taken by the registrar, Mr. Macready.

John R., aged 26, was admitted to the hospital under Mr. Savory's care on May 14.

At 6 A.M. the previous day, May 13, he swallowed during sleep a plate with two artificial teeth attached to it. He vomited soon afterwards and has been sick occasionally since.

Three hours after the impaction of the teeth his neck began to swell. He now complains of pain about the episternal notch and above it. There is no dyspnœa when he is quiet. He cannot swallow, as the attempt gives him much pain. He brings up much frothy mucus, but no blood. It pains him greatly to try to talk.

There is much fulness of the front and sides of the throat, due to emphysema.

When placed under chloroform, Mr. Savory was not able to feel the teeth with his finger, but on passing a horse-hair probang, he felt the plate midway between the larynx and sternum. The probang was passed beyond the obstruction and then withdrawn several times; at length the plate was dislodged upwards, and came within reach of the finger, when it was removed with long forceps.

May 15.—Has been very restless during the night. He did not explain why he was so uncomfortable. Tossed about and groaned frequently, hawking and spitting frothy mucus. He had

three subcutaneous injections of $\frac{1}{6}$ gr. of morphia, and subsequently a draught of bromide of potassium and chloral, after which he slept for three hours.

The neck appears rather more swollen and is still emphysematous. Breathing rapid. He is constantly tossing about in the bed and groaning. His face is flushed. A linseed-meal poultice was applied to the neck. He told his wife that the agony in his chest was more than he could describe. Later on in the day he had orthopnœa.

May 16.—Is very much flushed. No improvement. Did not sleep during the night, is still constantly turning and tossing about in bed. Respirations 48. At 1.30 P.M. he became worse. Remained conscious almost to the time of his death at 2.50 P.M.

His temperature was high—

May 14,	. .	Morning, 101°.
,,	. .	Evening, 102.4°.
,, 15,	. .	Morning, 103.4°.
,,	. .	Evening, 104°, and later 105°.
,, 16,	. .	Morning, 102.6°.
		Just before death, 102.6°.

Post-mortem Examination.—Much emphysema of the cellular tissues of the neck. The emphysema was traced into the chest, and filled both the anterior and posterior mediastina.

The œsophagus presented an ulcerated perforation on the posterior wall opposite the cricoid cartilage, and a corresponding ulcer was found on the back of the cricoid cartilage itself, to the left of the middle line, just below the arytænoideus muscle. This last ulcer perforated the mucous membrane and submucous tissue, but did not penetrate the interior of the air-tube. It was evident from these ulcers that the plate had been arrested at the end of the pharynx, and had taken up a position nearly in the antero-posterior plane, with one edge resting against the cricoid cartilage and the other against the wall of the pharynx.

The pharynx was perforated, and a suppurating track could be traced from the opening down the left side of the œsophagus to the chest. It descended along the spine some distance below the root of the left lung. The left pleura contained a large amount of pus, which compressed the lung to some extent against the spine. The lungs were somewhat congested, their pleural surfaces much inflamed. No perforation of the pleura was

detected. Emphysema was found on the right side, and to a less extent on the left.

I am unable to state what attempts had been made to remove the plate before the patient was admitted to the hospital. He came from Wales, and had, whilst suffering much pain and distress from the impaction of the plate of teeth, been exposed to a long and tedious night-journey.

It would be very interesting to know what were the difficulties which prevented the plate being removed at once, as it is clear that, when first impacted, it was within easy reach of the mouth, and the plate itself was a small one and did not present any unusually sharp points. The teeth attached to it were two in number, representing the right lateral incisor and the first bicuspid of that side.

Before the patient's admission to the hospital the plate had been dislodged from the pharynx and become impacted lower down; and it appears that when admitted he was suffering from the effects of the inflammation and ulceration at the original seat of impaction, rather than from the presence of the plate in the œsophagus.

It is mentioned in the notes that he vomited soon after the impaction of the teeth. One would like to know if he had taken an emetic. The early occurrence of emphysema and the amount of ulceration of the pharynx, which was too great to have resulted from mere pressure in so short a time, are evidence that the walls of the pharynx were torn, either by attempts at removal or by the muscular action which took place during the efforts to vomit.

The case of Margaret C., page 53, shows that death might have resulted in this case also, even if the teeth had been removed at once; and this, like hers, illustrates the great danger of mediastinal suppuration and purulent infiltration which appears especially to belong to abscesses in connection and communication with the œsophagus.

The fatal termination of this unfortunate accident in Margaret C. led me to consider the subject of the impaction of foreign bodies in the pharynx and œsophagus; and I may, without trespassing on the surgical portion of the subject, discuss the steps to be taken in these cases, and draw attention to the eccentricities, if I may use such a term, of Nature in dealing with foreign bodies which have been either accidentally or intentionally swallowed.

When a foreign body is swallowed, it may become impacted in the pharynx and œsophagus, or pass on to the stomach. How it happens that sometimes foreign bodies of the most unlikely

kind, such as pins, needles, pointed and irregularly shaped bodies, like artificial plates with teeth attached, pass on at once to the stomach, whilst at other times rounded objects, such as coins, remain impacted, cannot be explained.

Most of the instances of coins retained in the gullet are met with in children, and we may conclude that in them the œsophagus has not attained a sufficient size to allow coins to pass down it.

After having reached the stomach, a foreign body may either remain there indefinitely, or may be rejected by vomiting, or may pass onwards into the bowels, or, as in some few instances, it may perforate the wall of the stomach and make its way outwards with suppuration of the surrounding parts.

By far the larger number of foreign bodies that pass the pylorus traverse the rest of the intestinal canal without much difficulty, and are passed per anum. Sharp and elongated bodies are naturally more dangerous during their passage than rounded ones; hence most of the recorded cases of foreign bodies making their way through the bowels and being removed from abscesses in the abdominal walls are instances of needles, knife-blades, and other pointed articles.

In attempting to withdraw foreign bodies impacted in the pharynx or œsophagus through the mouth, the amount of force which it is justifiable to use in the attempt must be left to the judgment of each individual operator; in like manner the combination of traction with other means, such as rotation, or depression of one portion and elevation of another, of the impacted body, depends on the nature and position of the body itself. The same may be said of special instruments which have been made use of in these cases, though in most instances removal has been effected by forceps.

When it is found impossible to withdraw the foreign body through the mouth, what is to be done? Should attempts be made to push the impacted body into the stomach, or should œsophagotomy be undertaken at once?

There are several instances recorded[1] in which artificial plates with teeth attached were with ease pushed onwards to the stomach, and subsequently passed from the bowels, although it had been found impossible to withdraw them. When we add to these the more numerous instances in which foreign bodies have either passed unaided into the stomach or have been pushed onwards by a probang, and subsequently satisfactorily got rid of either by vomiting or by completing their journey

[1] Mr. H. Smith's Case, "Lancet," April 1, 1871. Mr. David David's Case, "Lancet," April 8, 1882.

through the bowels, it appears to me that no very great risk is run by adopting this course, provided that care be taken to use very little force in the attempts at propulsion.

It is obvious that in the case of large bodies whose shape is irregular, or whose surfaces are armed with sharp and projecting points or hooks, the risk of injury to the œsophagus and the improbability of their eventual evacuation *per vias naturales* would be greatly increased.

I have been unable to find any recorded cases of fatal hæmorrhage or death following attempts at pushing impacted teeth or other foreign bodies onwards to the stomach, but I fear that such accidents have frequently happened. Mr. Henry Smith[1] states that he has known two instances of death occurring in this way; and Dr. King at the Medical Society of London, January 16, 1871, also mentioned a case in which fatal hæmorrhage had occurred in the hands of so able a surgeon as Mr. Syme, who, being unable to pull up a set of false teeth, pushed them down. From these instances, which are only incidentally, as it were, recorded, I fear we may conclude that many more similar accidents have happened, unsuccessful and fatal cases not being published as freely as successful ones.

When all attempts at extraction of the foreign body through the mouth, or of dislodging it by downward pressure, have failed, pharyngotomy or œsophagotomy still remain for the surgeon to have recourse to. Before considering the advisability of this operation, it will, I think, be of use to review very briefly the results arising from the impaction of foreign bodies in the pharynx or œsophagus, and for this purpose I shall give brief abstracts of some of the cases recorded in different journals and periodicals, most of which have not hitherto been brought together.

I.

Cases where Foreign Bodies have been Impacted for lengthened Periods in the Pharynx or Œsophagus without leading to Serious Injury of the Œsophagus or Neighbouring Parts.[2]

Case I.*—*Sir James Paget's Case.*[3]

A gentleman, 60 years of age, swallowed his false teeth, and they became impacted in the pharynx, and remained there

[1] Lancet, April 1, 1871.

[2] The cases marked * have been already collected and published by Mr. Weiss in the "Odontological Society's Transactions," vol. ix.

[3] Medical Times and Gazette, January 18, 1862.

four months. His recovery on their removal was rapid and complete.

CASE II.*—*Mr. J. Blackstone and Mr. G. Pollock's Case.*[1]

A lady, aged 33, in attempting to swallow a pill, swallowed a small gold plate with two teeth attached; it became impacted in the œsophagus low down, and gave much pain, referred to a spot in the median line corresponding to the lower end of the œsophagus. After nineteen days Mr. Pollock passed an œsophagus tube. When more than half-way down and near the cardiac orifice, the extremity of the instrument came in contact with some solid resisting body; with very slight continued pressure the latter appeared to be almost immediately dislodged, and the end of the tube passed into the stomach. The patient immediately expressed herself relieved from the pain, and was able to swallow solids and liquids without difficulty. Ninety-seven days afterwards, in attempting to take two pills, she vomited and brought up a quantity of fluid from the stomach, and the plate and teeth along with it.

CASE III.—*Dr. Barling's Case.*[2] *False Teeth Impacted in the Pharynx for a Month.*

Dr. Barling showed, at a meeting of the Birmingham and Midland Counties branch of the British Medical Association, a gold plate with two teeth attached, which had remained a month at the back of the larynx, encircling the thyroid cartilage. Exploration of the pharynx and œsophagus had at first failed to discover it, but on pain being referred to the region mentioned, it was found and extracted.

CASE IV.—*Mr. Edward Williams' Case.*[3] *A Halfpenny Impacted in the Œsophagus for* 181 *Days.*

On August 12, 1879, a child was brought to Mr. Williams' surgery, having just before swallowed a halfpenny. Mr. Williams' *locum tenens* failed to find any evidence of its presence in the gullet, and, as there were no urgent symptoms, left matters alone. After some months the child was unable to swallow anything solid or to lie down in bed at night, and complained of pain to the left of the ensiform cartilage. On the 9th of February 1880,

[1] Lancet, April 3, 1869.
[2] British Medical Journal, April 30, 1881.
[3] Lancet, February 14, 1880.

181 days afterwards, Mr. Williams passed a double probang, which brought the missing coin into the mouth.

Case V.—*Mr. Hugh Thomas's Case.*[1] *A Halfpenny Impacted in the Œsophagus for Twenty-eight Days.*

A lad, aged 12, playing with a halfpenny on September 1, 1877, swallowed it. Twenty-eight days after, he was taken to the Queen's Hospital, Birmingham, having difficulty in swallowing, loss of flesh, and fixed pain at the lower portion of the sternum. A double probang was introduced; about the lower third of the œsophagus a resistance was met with, but the probang passed on to the stomach. It was then expanded and slowly withdrawn, bringing up the coin in its meshes. Four days later he could eat and drink without difficulty and "felt quite well."

Case VI.—*Dr. Ogier Ward's Case.*[2]

This case is quoted by Mr. Durham in his article on foreign bodies in the pharynx in Holmes's "System of Surgery," vol. ii. A child one year and eight months of age swallowed a halfpenny. Stridulous breathing and difficulty in swallowing came on immediately after the accident. The child, which was still at the breast, could only suck one mouthful of milk at a time, and was obliged to withdraw from the breast at each attempt to swallow. Eight months elapsed, when, after a severe fit of coughing, the child took the halfpenny from out of its mouth and gave it to his father. The child gradually recovered.

Case VII.

is in some respects most remarkable, and is, so far as I know, quite unique. A young man, aged 19, on March 13, 1876, swallowed a shawl-pin, head first. A single cough removed all the momentary discomfort produced, but he sought advice at St. George's Hospital as soon as possible. Nothing was discovered then in his throat. For a fortnight he examined his motions daily, but saw no trace of the pin. From this time he forgot all about the mishap until the reappearance of the pin itself, eleven months after, recalled it to mind. A week after the accident he commenced to feel a slight pricking sensation on the right side of the neck about the situation of the cricoid cartilage. This was intermittent, being once absent for a month, and was accom-

[1] British Medical Journal, December 1879.
[2] Pathological Society's Transactions, 1848–49.

panied by a constant, harsh, dry cough, occasionally aggravated in paroxysms lasting from a quarter to half an hour, only sometimes followed by a little blood-streaked expectoration. Both the cough and pricking sensation were aggravated by the recumbent position. There was no difficulty nor pain in breathing or swallowing at any time, nor any alteration in voice.

On November 11, 1876, the man attended as an out-patient at St. George's Hospital, and the notes then taken show that he complained of a pain felt only near the right clavicle, and that it hurt him when he coughed. He had slight bronchitis. He was not much benefited by treatment, which continued for three weeks. During this time he made no mention of having swallowed a pin, nor on January 17, 1877, when he again presented himself at the Out-patient Department of the hospital with the same complaints, cough and pricking feeling on the right side of the neck, both worse on lying down.

Three weeks before this he had noticed a lump forming in the right side of the neck near the cricoid cartilage. Now there was a diffused painful swelling, extending from the angle of the jaw almost to the root of the neck. There was no fluctuation and some redness of the skin. Nothing wrong was detected in the chest. There was slight congestion of the fauces. The cough continued unabated, but the swelling of the neck gradually subsided, and in a fortnight from the commencement of his attendance was not noticeable.

While at work on February 8, 1877, he suddenly coughed up the pin, first the head with part of the shaft attached, and an hour afterwards the rest of the shaft. He did not expectorate anything with either piece. The head of the pin is of the size of a boot button, made of glass; three-quarters of an inch of the shaft is still attached to it: this has been eaten away to a point, and is covered with blood and rust, except the quarter of an inch next the head, which has escaped with almost no corrosion. The other piece of the shank, an inch and a half in length, tapering at either end, is entirely covered with the same rusty coating.

On February 9, the day after the pin had been coughed up, the patient continued to have a slight cough and pricking in the throat. The lungs and the throat, as far as could be ascertained without the use of a laryngoscope, were natural. The swelling of the neck had entirely disappeared. A week after he had no cough to speak of, and his throat felt quite comfortable.[1]

It is hard to reconcile the statement that after the first fortnight he forgot all about the mishap with the continuity of the

[1] Pathological Society's Transactions, vol. xxviii. p. 120.

symptoms, especially the pricking in the throat. It seems to me more probable that, for some reason or other—probably from fear of being disbelieved—he was unwilling to mention the subject. Mr. Dunbar, by whom the case was brought before the Pathological Society, was of opinion that the pin was lodged in the right glosso-epiglottic fold, and for his reasons I would refer any one interested in the subject to his remarks in the "Pathological Society's Transactions."

It is not always, however, that the sufferers escape so easily. In some instances, removal of the impacted body has not immediately relieved the patient from all his troubles; and in others, retention of the impacted body has led to fatal results. As examples I may quote the following:—

II.

Cases in which Immediate Relief has not followed the Removal of Foreign Bodies from the Œsophagus, and Cases of Death arising from their Presence there.

Case I.*—*Dr. Geoghan's Case.*[1]

A gentleman, aged 60, swallowed a vulcanite plate with five teeth, which remained impacted in the pharynx for five months. After their removal the chief symptoms were removed, but for twelve months after removal uneasiness was felt at the side of the neck, and solid food had to be washed down by a mouthful of fluid.

Case II.—*Mr. Nicholl Evans and Mr. T. Smith's Case.*[2] *Impaction of a Gold Plate and False Teeth in the Œsophagus for upwards of Two Years.*

A young lady, aged 21, an invalid for many years, swallowed her teeth while taking a pill on April 26, 1877. On passing a probang, the impacted teeth could be felt 8½ inches from the lower incisor teeth. Later in the day Mr. Smith failed to dislodge them, and again on the 29th. Neither the patient nor her friends would permit further operative measures, and she remained for two years in a most miserable condition, though not apparently suffering very much pain in the œsophagus. How far her condition may have been due to the impacted plate it is impossible to conjecture, as she apparently was the victim of hysteria in its most aggravated form. Two years and eight

[1] Medical Press and Circular, March 14, 1866.
[2] Lancet, July 19, 1879.

days after their impaction the false teeth were vomited. Fifty-one days after their reappearance there was no improvement in the patient's general condition, and as much difficulty in deglutition as whilst the teeth were impacted.

CASE III.—*Mr. Armstrong's Case.*[1] *A Halfpenny Impacted in the Œsophagus, and Causing Death after Two Years.*

On October 22, 1856, a child was brought to the surgery. He had been seized with vomiting of blood half-an-hour before while at play. In the surgery he brought up about half-a-pint of coagulated blood, and with it a halfpenny. The boy vomited again in the course of the night and died.

Two years and three months previously he had swallowed a halfpenny, and ever since had frequently vomited his food and had a difficulty in swallowing meat.

At the post-mortem, on passing the finger up the œsophagus from the stomach, it was grasped rather tightly a little below the arch of the aorta. On slitting the œsophagus open above the constriction, two ulcerated points were seen on opposite sides in its mucous lining. The ulcer on the left had perforated the aorta by a small opening below and opposite to the origin of the left subclavian. About half-an-inch of cicatrix appeared above each ulcer, marking the downward course and progress of the coin in the two years and a quarter it had remained suspended in the gullet. Whether the contraction below had been congenital or acquired after the sticking of the halfpenny is a question "not easily decided. My impression is, that this constriction had existed from birth, and it had checked the further descent of the coin."

CASE IV.—*Mr. C. Laurence Bradby's Case.*[2]

A prisoner in Pentonville prison, seven months after his reception, first stated that he had swallowed a bad half-crown some time previous to his conviction. To this he attributed his ailments, vague pain in the chest and dyspeptic symptoms. On September 24, for the first time, he vomited some blood and was removed to the infirmary. Two hours afterwards, while sitting up in bed to take some food, the hæmorrhage recurred, and a large quantity of blood was again vomited. He sank down in the bed and died.

In connection with these cases, I may mention a few other in-

[1] British Medical Journal, November 8, 1879.
[2] Medical Times and Gazette, October 17, 1868, p. 447, quoted by Mr. Durham.

stances of fatal hæmorrhage arising from the retention of foreign bodies in the œsophagus. The first I saw many years ago in the practice of Mr. Wormald at the hospital. A sharp fish-bone which stuck in the œsophagus had its point projecting for a considerable distance through the œsophagal wall, and gradually sawed a hole in the aorta, and occasioned death from hæmorrhage. I do not recollect whether in this case a probang had been passed previously to the man's entering the hospital, but I am almost sure that no operative measures at all were attempted in the hospital. A second very similar case, in which the pericardium and heart were wounded, has been published by Mr. Eve in the "Clinical Society's Transactions."[1] He also refers to Mr. Wormald's case. A third and still more remarkable case is that communicated to the Pathological Society by Dr. Farquharson for Dr. Spry.[2] A trooper in the 2d Life Guards, five days previously to his death, had pain in the chest, which he attributed to having eaten his dinner too quickly. A very small spiculum of bone, $\frac{1}{8}$ inch in length, had perforated the wall of the œsophagus and led to ulceration, which spread to the aorta, and caused ulceration of that vessel $1\frac{1}{4}$ inch below the origin of the *arteria innominata.* Across the ulcer a rent took place, and the man died suddenly, vomiting blood.

Another very similar instance of death from hæmorrhage, consequent on ulceration caused by the presence of a fish-bone in the œsophagus, occurred in the London Hospital under the care of Dr. Ramskill;[3] and in the *Lancet,* August 25, 1860, is recorded the *post-mortem* examination of a woman brought in dead to the University College Hospital. A fish-bone had perforated the stomach close to the œsophagus, then the diaphragm and pericardium, and lastly the heart, puncturing the right coronary vein.[4]

Cases Fatal from Suppuration.

In the Museum of the hospital[5] is part of an œsophagus and pharynx with the surrounding structures, which were removed from the body of a man who, nine days before death, swallowed a fragment of bone, which stuck across the œsophagus just below the level of the cricoid cartilage. Its pointed extremities are imbedded in the ulcerated and sloughing mucous membrane, and, communicating with these ulcerated patches, cavities filled with pus exist on each side the pharynx. The fragment of bone was so situated that the probang when introduced slipped over

[1] Vol. xiii. p. 174. [2] Vol. xix. p. 219. [3] Lancet, May 17, 1871.
[4] Mr. Andrew's Case, quoted by Mr. Durham. [5] No. 1866.

the bone's posterior border, so that during life no certain indication of its presence was obtained.

A somewhat similar case was brought by Dr. Gairdner, January 1859, before the Medico-Chirurgical Society of Edinburgh; a woman supposed to have typhus with symptoms of double pneumonia and a peculiar laryngeal cough. At the *post-mortem* a fish-bone which had passed through the œsophagus was found in an abscess in front of the spine. Pus was found in the pleuræ and pericardium.[1]

These cases show that though in fortunate instances little harm may result from a lengthened sojourn of a foreign body in the œsophagus, there is very considerable risk to life if they are permitted to remain; and I think that there can be but little doubt that their removal by an operation, when possible, is attended with less danger to the patient than letting the foreign body remain impacted and trusting to the chapter of accidents.

It belongs to the province of the surgeon to decide how low a point in the thoracic portion of the œsophagus can be reached after œsophagotomy with a fair prospect of manipulation being successful, but there can be no question that in the cervical portion of the œsophagus œsophagotomy is to be performed rather than attempts made to push the foreign body onwards to the stomach.

In 1870, in his work,[2] Mons. Felix Terrier collected all the recorded cases of œsophagotomy for the impaction of foreign bodies up to that time, and since that date I have only been able to find five other cases recorded in full, and mention of one other. Of the five recorded cases, three were successful and two fatal; but in one of the fatal cases gastrostomy was also performed, and death cannot fairly be attributed to the œsophagotomy.

The sixth case I cannot find reported, but it was mentioned by Mr. Barrett[3] as occurring at the London Hospital; the late Mr. Maunder operating successfully for the removal of a set of false teeth.

Herr Bille's unsuccessful case is the only instance in which the operation has failed to remove the foreign body when œsophagotomy has been done. An examination of the table of twenty-four cases of œsophagotomy collected by Mons. Terrier shows that nineteen recovered. In one there is no mention of the result, but the man probably recovered; in four, death followed. Taking them altogether, there are thirty cases of œsophagotomy, with

[1] Quoted from Mr. Durham's article, Holmes "System of Surgery," vol. ii

[2] L'Œsophagotomie Externe, Paris, 1870.

[3] Odontological Society's Transactions, vol. ix. p. 49.

twenty-three or twenty-four recoveries. The six fatal cases require examination.

Some of the older cases collected by Mons. Terrier have been commented on by Mr. Cock, and I would merely say that Mr. Arnott's was a child aged two, not operated on until thirty-six days after the impaction of the bone, and that death occurred from pneumonia, which was present at the time of the operation. In the other case of a child, Mons. Demarquay's, the coin had been impacted ten days, and a retropharyngeal abscess opened into the pleura. It is, I think, perfectly certain that the abscess existed before the operation.

In the two adult fatal cases, in one, Mons. Flaubert's, eight days elapsed between the impaction of the bone and the operation, and after death the œsophagus was found perforated, and an abscess in the surrounding tissues.

In the fourth case, Mons. Martini's, although the operation was performed early on the fourth day, the man had been submitted to many and violent attempts at extraction, and had even had tartar emetic injected into his veins.

Herr Bille's fatal case cannot be fairly included, as gastrostomy was performed as well.

These statistics show that there is very little risk in the operation itself, and that a good result may be fairly expected if the operation is done shortly after the foreign body becomes impacted, and before the contiguous tissues have been seriously injured either by forcible attempts to extract or push onwards the foreign body, or as the result of muscular action caused by emetics.

The conclusions I have drawn from a survey of these cases are as follows :—

1. All foreign bodies impacted in the pharynx or œsophagus should be, when practicable, extracted through the mouth.

2. In the case of large objects of irregular shape, emetics are to be avoided.

3. In the case of small objects like fish-bones, &c., when they cannot be caught and extracted, the patient should swallow large mouthfuls of bread-crumb ; failing relief by this means, an emetic may be tried.

4. The greatest care and gentleness should be used in attempting to push a foreign body which cannot be pulled up, downwards to the stomach.

5. When a body, in spite of all attempts to remove it, remains impacted, the patient runs less risk by submitting himself to œsophagotomy than by trusting to the chapter of accidents.

In bringing this paper to a close, I will add a few remarks on the passage of foreign bodies through the stomach and intestines.

A perusal of Mr. Poland's interesting and curious article in the Guy's Hospital Reports,[1] leads one to the conclusion that the stomach will for a time tolerate the presence of all sorts of foreign bodies without sustaining much damage, and that the most unlikely bodies pass through their tortuous journey in safety to the anus.

When a foreign body has reached the stomach, it appears to me that the most prudent course is to wait on events and be guided by the symptoms that supervene. Not a few are after a time ejected by vomiting, after a longer or shorter stay there, as in the case already given on page 60, where a set of false teeth was vomited after being retained ninety-seven days in the stomach, during which time they gave rise to but little discomfort. Among Mr. Poland's cases is an instance of a crownpiece being swallowed during an epileptic fit, and remaining in the stomach for a year and eight months, and being then ejected. Dr. Roth[2] brought before the Medical Society of Strasbourg the instance of a child, three years old, who swallowed a button. When first seen by him, a purgative was administered, but nothing was found in the dejections. Much vomiting occurred; for some time solid food could not be taken, but with a milk diet the child recovered. Two years subsequently the child swallowed another button; vomiting again occurred, and on the twelfth day the button recently swallowed was vomited, accompanied by the one swallowed two years previously.

Even in cases where death has resulted from the presence of foreign bodies in the stomach and intestines, the mucous membrane of the stomach has been found uninjured, as in the celebrated case of the sailor William Cummings, in whose stomach the remains of thirteen or fourteen clasp-knives were found, and who had in the course of his life swallowed and passed per anum seventeen other clasp-knives.

Mr. Little,[3] so far as I know, is the only surgeon who has successfully removed through the œsophagus and mouth a foreign body supposed to be in the stomach. I venture to say supposed to be in the stomach, because from the severity of the symptoms, and the ease and certainty with which the false teeth were felt by both himself and the house-surgeon, it seems to me not unlikely that they were impacted at the cardiac end of the œsophagus, a spot where foreign bodies appear to have a tendency to stick, and where they produce much more distressing and severe symptoms than when in the stomach. In this case the teeth were withdrawn with ease as far as the

[1] Third Series, vol. ix. p. 269. [2] Lancet, July 15, 1876, p. 108.
[3] Medico-Chirurgical Transactions, vol. liii. p. 93.

pharynx, where they stuck, and required some manipulation before complete removal.

Further experience has probably caused Mr. Pollock to modify the views he expressed in the *Lancet*[1] as to the improbability of hooked and pointed bodies, such as artificial plates with teeth attached, passing through the pyloric and ileo-cæcal valves, numerous cases of larger and quite as irregularly shaped and pointed plates as the one he described having been subsequently recorded as passing per anum.

In addition to the cases collected by Mr. Poland, I will bring forward a few of the more remarkable instances of the passage of foreign bodies through the intestines recorded in our journals since the publication of his paper. Sir W. Ferguson published[2] an instance of a gold pencil-case, $4\frac{1}{4}$ inches in length, swallowed by a gentleman with suicidal intent, which traversed the whole length of the digestive tract in twenty-two days. During the two first days there was difficulty in swallowing and inability to take solid food, and it seems probable that during this time the pencil was impacted in the œsophagus; afterwards the man appeared to suffer no discomfort from his indigestible meal.

Dr. Barnes of Eye, Suffolk, narrates a case[3] of a child twelve months old who swallowed a hair-pin $2\frac{1}{2}$ inches long. The pin was passed on the fourth day. A safety-pin,[4] the size not mentioned, nor is it stated whether it was open or shut, was swallowed by a child eight months old on the 23d of July, and was passed per anum on the 23d of September, no symptoms having manifested themselves.

Dr. Dickinson exhibited a large pin at the Pathological Society, November 2, 1869, which a child between two or three years of age was seen to swallow point foremost. Three days later the mother saw the point of the pin emerging at the anus, and removed it. The child apparently suffered no pain or inconvenience during the passage of the pin.

Mr. Anderson of Cambridge reported in the *Lancet*[5] a most remarkable instance of a foreign body safely travelling through the bowels. A lunatic, 40 years of age, swallowed a door-key $4\frac{1}{2}$ inches long, weighing 9 drachms; a few days afterwards the key was removed from his rectum.

In the *Lancet*, August 12, 1882,[6] mention is made of a woman suffering from melancholia who passed three teaspoons enveloped in hardened fæces and crusted with glairy mucus.

[1] Lancet, vol. i. 1869, pp. 456–490.
[2] Lancet, March 12, 1870.
[3] Lancet, March 18, 1871.
[4] Lancet, December 9, 1876, Mr. Ayling.
[5] May 27, 1870.
[6] See p. 234.

The woman stated that she swallowed them all in one day with the intention of committing suicide.

An almost endless list might be made of foreign bodies of all sorts and sizes which have been known to pass through the bowels, whilst comparatively few instances are to be found of foreign bodies being retained and causing death or serious mischief, except in cases where the intestines have been in an unnatural condition, either a constriction of the gut existing, or a hernia being present, or the foreign bodies themselves of so sharp and pointed a character that they have pierced the coats of the bowel and caused an abscess.

I have not myself found a single instance recorded of false teeth being retained in the intestines, though some years ago I had a patient under observation for several months with colicky pains in the belly and some slight tenderness in the region of the cæcum, who attributed her condition to having swallowed a set of false teeth. She remained in the same condition until I lost sight of her, and the evidence of the teeth having been swallowed, or, if swallowed, not being passed, was not to my mind very conclusive.

The vermiform appendix is the only portion of the intestines, when in a natural state, in which foreign bodies are apt to be retained, and these are of small size and hardly come into the same category as the cases I have been considering. I mention them here because the view is often held that the older accounts of seeds, &c., in the vermiform appendix are erroneous, and that the bodies found there were fæcal concretions, and not truly foreign bodies.

Mr. Poland gives two instances of pins found in the vermiform appendix. I myself found one surrounded by fæcal matter lodged in the commencement of the vermiform appendix, having the point projecting into the cavity of the cæcum (Museum, Specimen No. 2032); and there is another specimen in our Museum, No. 2033, of a pin or nail which lodged at the distal end of the appendix and perforated its walls. No. 2034 is an example of a gall-stone lodged in the appendix and causing destruction of its coats. Dr. Payne, November 2, 1869, exhibited at the Pathological Society a pin situated in the vermiform appendix encircled by semi-crystalline concretions.

From these and numerous other examples it is evident that there is considerable risk of foreign bodies of small size lodging in the vermiform appendix. At the same time the *post-mortem* records of the hospital prove that in by far the largest number of deaths from mischief in and around the vermiform appendix no foreign body was met with.

It is obvious that any foreign body which has passed through the small intestines can pass along the colon and rectum, but the pouched condition of the large intestine seems not unfrequently to interfere with the safe passage of elongated bodies through it, and hence there are a good many instances of the impaction of knife-blades, &c., in the rectum, and much pain and tenesmus has occasionally preceded the expulsion of foreign bodies from the rectum. Artificial teeth have stuck in the rectum after having easily and rapidly accomplished all the rest of their journey.[1]

Treatment.—All authorities appear to be agreed that the use of purgatives is to be avoided, and not a few recommend a constipating diet. Mr. Pollock[2] speaks, as it seems to me, too confidently of the value of emetics given on a full stomach. I have mentioned several instances of coins, sets of false teeth, &c., &c., being spontaneously vomited, but emetics have generally proved useless, and, as I have already shown, they might cause much harm in the event of the foreign body becoming impacted in the œsophagus in its upward journey. Mr. Carter,[3] however, mentioned a case at the Medical Society in which a brooch accidentally swallowed was vomited after an emetic given immediately after a plentiful meal of bread. The size and shape of the foreign body would guide one as to the propriety of trying emetics, but in all cases of pointed bodies, or of those with sharp hooks and points, like artificial teeth-plates, I should consider them dangerous. I do not myself see that any advantage is likely to be obtained from the administration of tow, wool, or thread, as suggested by Dr. Dickson, and spoken of by Mr. Weiss as a most valuable suggestion. Tow and shreds of cotton, when taken into the stomach, would be likely to act as irritants, and if they did collect round the foreign body, would probably leave the projecting points exposed. A copious diet of food containing much indigestible matter and plenty of oil, appears to me the most suitable treatment. Olive-oil, when taken in large quantities, has a tendency to form semi-solid masses in the bowels, which have been before now mistaken for gall-stones when discharged in the fæces. It seems probable that these gummy masses might form around a foreign body, and so assist in covering in its sharp edges and angles. A plentiful supply of woody fibre and other indigestible substances, favours the formation of large and bulky fæces, wrapped in which the foreign body might painlessly and safely pass through the last part of its journey to the anus.

[1] Dr. Julius' Case, Lancet, April 1860.

[2] Loc. cit.

[3] Odont. Soc. Trans., vol. ix. p. 173.

Cases in which Œsophagotomy was Performed for the Removal of Foreign Bodies from the Œsophagus.

No.	Sex and Age.	Nature of the Foreign Body.	Seat of Impaction.	Result.	Observations.	Name of Operator.	Where Recorded.
1	M. 25.	Plate with two teeth attached.	Œsophagus.	Death.	Swallowed during sleep. Death eleven days after operation from suppuration in the mediastinum. Duration of the impaction not stated.	Prof. Von Langenbeck of Berlin.	British Medical Journal, Feb. 1, 1879.
2	M. 58.	Portion of an œsophagus and stomach cleanser.	Lower end of œsophagus and stomach.	Death.	The instrument measured 12⅛ of an inch. Partly impacted in the stomach and partly in the œsophagus. Œsophagotomy failing, gastrostomy also was performed.	Herr Bille.	Berlin. klin. Wochenschrift, No. 38, 1880.
3	F.	Plate with artificial teeth.	Œsophagus above the level of the clavicle.	Cure.	The teeth had been impacted five weeks. They could be grasped by forceps, but could not be removed. Great pain was suffered.	Mr. M'Keown.	Clin. Soc. Trans., vol. xi. p. 233.
4	M.	Molar tooth of a sheep.	Œsophagus.	Cure.	Impacted four days before operation. Great pain and cyanosis.	Dr. Krönlein.	British Medical Journal, Feb. 1, 1879.
5	F. 23.	A chestnut.	Low in œsophagus.	Cure.	Chestnut could be easily felt, but could neither be extracted nor pushed onward to the stomach. Impacted one day.	Herr Bille.	Berlin. klin. Wochenschrift, No. 38, 1880.
6	...	Plate with teeth.	Œsophagus.	Cure.	I am unable to find any report of this case, and mention it on the authority of Mr. Barrett.	Mr. Maunder.	Odontol. Soc. Trans. vol. ix. p. 49.

ON THE PRECIPITANTS OF ALBUMINOUS SUBSTANCES IN THE URINE.

BY

VINCENT HARRIS, M.D.

Since the first demonstration of the connection between disease of the kidneys and the presence of albumen in the urine, the detection of this abnormal urinary constituent has naturally been considered of the highest degree of importance. Until a comparative recent date the usual methods adopted for precipitating it were of the simplest description, and although no doubt in a vast majority of cases the simple means employed answered the required purpose, yet it is generally known that many substances exist which possess in a higher degree the property of detecting small amounts of albumen, either in solution in the urine or elsewhere.

During the last twelve months I have devoted a considerable amount of time and attention to the consideration of the relative merits of the tests which have been proposed for the qualitative estimation of albumen in the urine and elsewhere. The discussion carried on in the *Lancet* some months ago brought prominently before the profession the use of picric acid as a test, and about the same time a paper of Dr. Oliver's in the same journal (since republished in pamphlet form) not only contrasted the last-named reagent with many of those which have been previously popular, but also brought into notice several other very important albumen precipitants. I confess that the last-mentioned writer has already done a great deal of the work of contrasting these various precipitants, but as no doubt he has met with a greater degree of success with what we may call his own reagents, I cannot help thinking that he has rather minimised the powers of some of the others, and so a series of experiments made with a view of contrasting the various tests by an impartial observer is, I venture to think, not uncalled for. Although

when I commenced my experiments I had not in view the detection of albumen in the urine, but rather the detection of a definite quantity of egg-albumin in solution, seeing that the method had been adopted by others, I altered my plan, and used albuminous urines diluted to a certain definite amount, in order to be able to compare my results with theirs. I propose to consider one by one the various methods of testing which are generally used.

Precipitants of Albumen in the Urine.

Class A.

1. Heat alone.
2. Heat and nitric acid.
3. Nitric acid alone used in the cold.
4. A number of substances, *e.g.*, mercuric chloride, silver nitrate, tannic acid, basic lead acetate, alcohol.

1. *Heat.*—On applying heat to an albuminous urine of acid reaction, a thick flocculent precipitate appears if the albumen be in sufficient amount; on standing, the precipitate settles to the bottom of the vessel or floats at the surface, according to the specific gravity of the urine. I have made a number of observations on the temperature of albuminous coagulation in various urines, adopting the simple but satisfactory apparatus described by Gamgee,[1] and have been able to confirm the observations of Brunton and D'A. Power[2] that coagulation occurs at no constant temperature; as many as 20°–30° F. difference is found to exist. Dr. W. Roberts notices this in his book on the kidney and urinary diseases. "Highly albuminous urine," he says, "begins to coagulate at a much lower temperature than feebly albuminous urine; and when the quantity of albumen is only a trace, turbidity does not occur until the urine has begun to boil." In blood-serum and in other organic fluids Hoppe-Seyler finds that the albumen coagulates at a definite temperature, viz., 72°–73° C., whilst opalescence occurs at from 60°–65° C. It may possibly be that in certain urines the amount of urinary salts present affect the coagulating point, either raising or lowering it; as I am inclined to think, from one or two observations, that the coagulating point in urines containing very much the same amount of albumen may vary considerably. This, at any rate, has been shown to be the case by Brunton and Power as regards urea, which in excess raises the coagulating point, and also as regards uric acid, other acids, and neutral salts, which lower it. Again,

[1] Physiological Chemistry of the Animal Body, vol. i. p. 15.

[2] On the Albuminous Substances which Occur in the Urine in Albuminuria (St. Bartholomew's Hospital Reports, 1877).

feebly albuminous urine may become turbid at a comparatively low temperature, although not so low as highly albuminous urine. Another explanation of the apparent diversity in the coagulating temperatures might be that the substance which is clinically termed albumen may not always belong to the class of native albumens but to the globulin class, or that the ordinary precipitant in albuminous urine is really made up, as is very likely, of several substances, one of which might be a globulin. Globulins coagulate at different temperatures to native albumens. For example, *myosin* has a coagulating point of 55°–60° C. (Kühne and Wegl), *fibrinogen* of 55°–57° C., and *paraglobulin* of 75°. I am more inclined to take this view because, in the first place, modified albumen has been shown to exist in the urine by many observers; and, secondly, on two or three distinct occasions, on diluting highly albuminous urine, in order to prepare a weak solution, by adding 2 cc. of the urine to 100 cc. of *distilled water*, I have had a precipitate. This phenomenon I have shown to several. Now Brunton and D'Arcy Power in their highly interesting paper referred to have shown, that not only the amount of certain urinary salts present, as above mentioned, affect the coagulating point, but also that, besides the globulins shown to exist in albuminous urine by Lehmann, Edleford and Senator, and Stockton, in addition to serum-albumin and egg-albumin, the presence of peptones and of the digestive ferments may be demonstrated, so that if peptones be present in urine, heat alone would not precipitate them.

2. *Heat and nitric acid.*—This test is the one commonly employed by medical men, although, as has been pointed out, it is a somewhat disagreeable method, as the nitric acid is so corrosive in its action. The way of employing the test is too well known to need description. Although highly considered as a test for albumen, very minute traces of that substance may exist in the urine without detection by this method; and in a detailed account which I shall add, I find this method low down on the list as regards its delicacy.

3. *Nitric acid alone in the cold.*—This test, usually known as "Heller's test," is a highly satisfactory one as regards its delicacy; but again there is the fact that nitric acid is an inconvenient reagent, and the supposed disadvantages of the test, which it is as well to bear in mind, viz., that in urines rich in urea, nitric acid used in the cold causes a precipitation of crystalline urea nitrate; and, secondly, that if the acid be added in too small a quantity or in too large a quantity, albumen, although existing in the urine, may remain undetected. But, the opalescence occurring or increasing on the addition of this

reagent in urines of patients who are taking certain of the balsams, *e.g.*, cubebs and copaiba, is not likely to interfere with the general value of the reagent. I have tried the test with minute quantities of egg-albumin in solution, and have been astonished to find the reagent almost as certain as the most delicate albumen precipitants. It will also precipitate, if carefully used, albumen when in the condition of derivated albumin, either acid or alkali. It therefore is a somewhat remarkable fact that, when added and *mixed* with urine containing a considerable quantity of albumen, the mixture *may* remain perfectly clear. Roberts has known this circumstance to occasion concealment of albumen in the urine, in a case of Bright's disease, for many months. Other strong mineral acids may precipitate albumen in the same way as nitric.

4. *Basic lead acetate, mercuric chloride, tannic acid, copper sulphate, creosote, carbolic acid, and alcohol.*—Each may precipitate albumen in solution, but most of them have distinct objections as tests, either because they precipitate other constituents of urine besides albumen, or because they require time to produce complete precipitation, because they are expensive, or what not. I am unaware that any one of them possesses any advantage over the tests (1, 2, 3) previously described. Absolute alcohol, added in large excess to urine rendered strongly acid with acetic acid, will precipitate all the proteids present in twenty-four hours.

All of the foregoing tests are what may be called established; the following are on trial, each being believed by its introducer to be specially delicate as an albumen precipitant. I shall allude to them as Class B. They are—

Class B.

1. Picric acid and acetic or citric acid.
2. Acidulated brine.
3. Sodium tungstate and acetic or citric acid.
4. Potassio-mercuric iodide, or Nessler's reagent.
5. Potassio-mercuric iodo-cyanide.
6. Potassium ferro-cyanide and acetic or citric acid.

1. *Picric acid,* as a test for albumen in the urine, has been, as was above mentioned, brought forward prominently into notice during the last year by Dr. George Johnson and his son, Mr. E. S. Johnson. Dr. Johnson stated in a communication to the Clinical Society in March last, that he had used picric acid as an albumen precipitant for two years with great satisfaction. He described three several ways of using the test:—

(*a.*) "Into a test-tube six inches long the urine is poured to within two inches of the top, then the tube being held in a slanting position, about an inch of the picric acid solution is gently poured on the surface of the urine, when, in consequence of its low specific gravity (1003), it only partly mixes with the upper layer of the urine, and, as far as the yellow colour of the picric acid extends, there will be more or less turbidity from coagulated albumen, contrasting with the pellucid unstained urine below." This method is an imitation of Heller's method of testing with nitric acid.

(*b.*) With the solid picric acid either in powder or crystals. "As much as is equal in bulk to a peppercorn may be shaken up in a test-tube with a column of urine about an inch in height. As the powder dissolves the urine becomes turbid with coagulated albumen. The object is to add as much of the test as the urine will dissolve." The application of heat quickens coagulation.

(*c.*) To add fifteen or twenty minims of water to the peppercorn bulk of acid in the tube, quicken the solution by the application of heat; an equal bulk of urine is then gradually added to the hot solution, when albumen, if present, is at once detected.

In using the picric test the urine must be acid, or previously rendered so by the addition of acetic acid.

Now, in bringing forward picric acid as a test for albumen, Dr. Johnson claims that it is more delicate and therefore more trustworthy than nitric acid, whether the latter be employed by the method of dropping the acid into the cold urine, or by pouring the urine on the acid previously placed in the tube; and he says that, comparing the two, he diluted a specimen of albuminous urine until one or other of the tests failed, and the result was that "picric acid solution shows the presence of albumen in a specimen *diluted considerably beyond the point at which the nitric acid fails to give any indication;*" and further, "that picric acid often causes an immediate albuminous opalescence in specimens in which nitric acid only slowly, and after an interval of some minutes, gives a similar but sometimes doubtful reaction."

Before mentioning my experience of this test I will briefly allude to one of the objections brought against it, viz., that it precipitates peptones as well as native serum-albumin. This was pointed out by Dr. Ralfe[1] and others. It appears to be well known, as previously stated, that peptones do occur in urine, but as regards their clinical significance few observations have been made; and it seems to me, therefore, that as several very

[1] Brit. Med. Journal, 1883, vol. i. p. 661.

simple methods exist for distinguishing between peptones and serum-albumin, it is a positive advantage to have the presence of peptones pointed out when they are present in urines, either with or without serum-albumin. It would be apart from the purpose to consider the question whether peptones in the urine signify any kidney-disease or digestive derangement only, but it is interesting to note the fact, demonstrated by Parkes and others, that it is possible to produce or increase previously existing albuminuria by the ingestion of large quantities of proteid food; and if albumen (serum-albumin), then in all probability peptones also.

My experience with picric acid as an albumen precipitant may be summed up in a few lines. I have tried the test in saturated solutions with very weak solutions of egg-albumin, and also with albuminous urine diluted to a definite extent, fifty or a hundred times, and have never found it fail where another test was successful. I have used the solution with acetic acid and with citric acid, and find that with either of these the action of the reagent appears to be more certain. The disadvantages of the test appear to be the colour of the reagent, making it difficult to see a faint cloud of precipitate, and the fact that when used in solution not to produce a ring but in the ordinary method (Dr. Johnson's third method), it is necessary to add a certain considerable amount before precipitation takes place. One or two peculiarities in the action of the test may be added, and in the first place, the albumen appears to be precipitated in finer granules than with other tests; secondly, that it subsides quicker. These may be mere accidents happening in my own experiments; but at any rate, in several cases it was so marked that I specially noticed it; and if the latter be always the case, it certainly would increase the value of picric acid in the general clinical quantitative estimation of albumen. With anything but saturated solutions of picric acid the results are not, I think, nearly so satisfactory.

It should be distinctly understood that picric acid precipitates not only native but derived albumins, peptones, and mucin (Ralfe), and confirmatory tests should therefore be employed in all doubtful cases if it be required to test the variety of proteid or allied substances present in the urine.

2. *Acidulated brine.*—A test introduced by Dr. W. Roberts, and described in the *Lancet* about the autumn of last year. If a saturated solution of sodium chloride be added to urine containing albumen, to which has been previously added some acid solution, a precipitate of albumen will result; or the test may be made by adding the acid to the solution of the salt and

filtering. As regards the acid used, Dr. Roberts prefers dilute hydrochloric, but other mineral acids will answer the purpose, or even acetic acid. This test corresponds closely with the method of precipitating proteids by means of acetic acid and sodium sulphate solution. The test may be used by dropping into the urine or by the contact method.

3. *Sodium tungstate.*—Dr. Oliver has done good service in bringing to light this test for albumen. In his hands it has proved to be a most valuable reagent. He recommends that it should be used as a test solution, prepared according to the following formula:—Saturated solutions of sodium tungstate (1 in 4) and citric acid (10 in 6), equal parts. It may be used either dropped into the urine or after the manner of Heller's test; and in the author's hands "always quickly revealed the same minimal proportions of albumen as could only be brought to light by picric acid and by the other tests of equal keenness." I look upon this test as even more satisfactory for minimal amounts of albumen than for maximal. The advantage of sodium tungstate is that it forms a perfectly colourless solution; is not apt to decompose, and is very cheap. I have tried this reagent in the "compound papers" form of Dr. Oliver, and in solutions with citric acid and with acetic acid, and have been highly satisfied with the result. In nearly every case the solution was equal in delicacy to any other reagent. I have experimented with weaker solutions, both 5 per cent. and 1 per cent., and am inclined to believe that the former is the best strength, as in excess of the reagent the albumen precipitant is redissolved.

4. *Potassio-mercuric iodide.*—A standard solution,[1] used by Tauret as a quantitative test for albumen. This solution is nearly the same as Nessler's fluid. It has the power of completely precipitating proteids from their solutions, and has been recently advocated by Mr. E. N. Stephen as a solution used in some French schools for the quantitative estimation of albumen. In this case, as in others, it is necessary to acidulate the urine with acetic or citric acid.

I have tried the potassio-mercuric iodide upon—

(*a.*) Dilute solutions of pure albumen.

(*b.*) Upon urine containing a trace of albumen and lithates.

(*c.*) Upon perfectly healthy urine containing excess of urea added to it.

(*d.*) Upon an acid solution of albumen.

(*e.*) Upon healthy urine without addition of abnormal constituents, with the following result:—

[1] Potassii iod. 3.22 grms.; mercuric chloride 1.35 grms.; aq. distill. ad 100 c.c.

With (*a.*), complete and satisfactory precipitation of albumen.

With (*b.*), a brownish white copious precipitate and a thicker sediment, brownish, not unlike uric acid, far in excess of the albumen present.

With (*c.*), no precipitate.

With (*d.*), a copious precipitate; if the albumen be in alkaline solution, that is to say, in a condition of alkali-albumin, there is no precipitation. This solution of the potassio-mercuric iodide precipitates peptones very quickly when in acid solution (gastric peptones).

With (*e.*), a similar result.

In all cases the solutions, if not previously acid, were rendered acid by addition of acetic (or citric) acid.

From the above it will be seen that this test is a good one for precipitation of pure albumen from its solution; it also precipitates acid-albumin and peptones, but not alkali-albumin. Great care should be taken that the solution should not be too acid or too alkaline.

5. *Potassio-mercuric iodo-cyanide.*—Dr. Oliver used this reagent by mixing a saturated solution of mercuric cyanide with potassium iodide, and adding it to urine previously rendered strongly acid with citric acid. If albumen be present, it is precipitated as a voluminous white cloud. The salts combine, producing "a new double mercuric salt ($4KI,HgCy_2$). When the solution of this iodo-cyanide is acidulated by citric or other acid, a gas (hydrocyanic acid) is liberated, which, when completely expelled by heat, leaves the albumen-precipitatory power of the solution unimpaired."

As a test for albumen in the urine, I cannot say that I have found this a safe precipitant, as it seems difficult to prevent the solution from being reduced. Almost any acid in excess produces this result.

6. *Potassium ferro-cyanide and acetic or citric acid.*—This reagent, which has long been known as one of the best tests for albumen, and therefore should properly be placed in Class A., has been placed last in the list, because it has appeared from my experiments, all things considered, very nearly the best albumen precipitant, and I am strongly inclined to urge its more general use. Several methods of using the reagent I have tried: (1.) Strongly acidulating the urine with acetic acid (5 per cent. to 10 per cent.), or of saturated solution of citric acid, filtering if a precipitate fall, and then adding one or two drops of a saturated solution of the ferro-cyanide; (2.) Mixing one-third of a solution of ferro-cyanide with two-thirds (5 per cent.) solution of acetic

acid; (3.) Mixing equal parts of a 1 per cent. solution of ferro-cyanide and of acetic acid 5 per cent. All of these methods precipitated the albumen if in fair amount; but as a delicate test, the first method far exceeded the others. Dr. Oliver found that this test failed to detect the presence of albumen in solution in twelve out of twenty cases. This I cannot help fancying must have been somewhat strange, but may have been due partially, as he himself suggests, to his method of using it. I found the ferro-cyanide test only surpassed in delicacy by picric acid, and then in only a few instances. It was about equal to sodium tungstate and citric acid, and surpassed sodium tungstate and acetic acid.

In Dr. Oliver's experiments with twenty urines containing minimal quantities of albumen, strong nitric acid failed in sixteen instances; boiling in fourteen; acidulated brine in fourteen; and potassium ferro-cyanide in twelve; whilst picric acid and potassio-mercuric iodide gave distinct and generally a sharply defined ring in every case.

Comparison of the reagents.—I may give an example of the way in which I compared the reagents. Having take a sample of albuminous urine, I boiled it, and estimated by the rough clinical method the amount of albumen present. I then made solutions of different strength, and applied the reagents one by one to different examples, comparing, as a rule, only those which, by previous trial, I had found to be the most sensitive. Generally two or three gave out, as it were, together, leaving one or more of greater delicacy. Sometimes I only compared one of Class A. with two or three of Class B.; but when I had any doubt I compared more. I early considered three tests to be of about equal power, and therefore in some cases I did not compare more than one of those with the remaining tests. As regards the solutions of potassio-mercuric iodide, and potassio-mercuric iodo-cyanide, these tests were used separately in a different series of experiments, and were not compared directly with the others, as they appeared to precipitate other possible constituents of urine. I am about to be engaged in submitting the other tests to similar experiments, viz., picric acid, sodium tungstate, and potassium ferro-cyanide.

Account of Some of the Urines Examined.

1. Acid, sp. gr. 1012, containing on boiling and addition of nitric acid when settled a quarter albumen, diluted 20–50 and 100 times. Picric acid and acetic acid passed all of the other tests.

2. Acid, sp. gr. 1012; a trace of albumen, say one-twentieth, diluted twenty times. The only reagent which gave reaction was picric and acetic acid.

3. Acid, sp. gr. 1014; dark coloured; on boiling with citric acid, about a half albumen. The delicacy when the urine was diluted showed the following result in order :—

(1.) Picric acid and acetic acid; potassium ferro-cyanide and acetic acid; sodium tungstate and citric acid.

(2.) Sodium tungstate and acetic acid; Heller's nitric acid test.

(3.) Acidulated brine.

In other words, the first three tests gave out about the same time, the two in the second class earlier, and the third class still earlier, as the solutions became weaker and weaker.

4. Acid, sp. gr. 1022; medium brown sherry coloured; albumen precipitated in a powdery condition on boiling, and settled to the bottom. When diluted, as the solutions became weaker the tests appeared to be in the following order :—Picric acid with acetic acid and ferro-cyanide of potassium about equal, and the nitric acid and sodium tungstate about equal.

5. Acid, sp. gr. 1011; very light coloured; on boiling, the separation of the albumen was very quick and in large flakes, which went at once to the top of the fluid; a small quantity fell. The urine was precipitated on pouring into a large amount of diluted water (globulin ?). In this case the acidulated brine appeared, even when used with considerable care, to be less satisfactory than the ordinary boiling and nitric acid test.

6. Acid, sp. gr. 1012; medium yellow colour; on boiling, three-fifths albumen. The six tests mentioned under 3 appeared to be on a par as regards delicacy.

7. Acid, sp. gr. 1014; clear light coloured; on boiling, three-fifths albumen; picric acid and acetic acid the most delicate, sodium tungstate and potassium ferro-cyanide following very closely.

8. Acid, sp. gr. 1006; containing blood; containing on boiling one-third albumen, as with 6.

9. Neutral, sp. gr. 1028; dark colour; containing on boiling one-twentieth; a mere trace of albumen. The delicacy in following order :—

(1.) Picric acid and citric (or acetic) acid; sodium tungstate and citric acid.

(2.) Potassium ferro-cyanide and acetic acid.

10. Acid, sp. gr. 1007; light-coloured; about half albumen on boiling; precipitated in great flakes, which float; partial precipitation on pouring into large amount of distilled water;

unable to find much difference in favour of any two tests. As in 6. Acidulated brine not tried.

11. Acid, sp. gr. 1010; light-coloured; containing about a half albumen on boiling; on dilution picric acid and potassium ferro-cyanide appeared to be more satisfactory than sodium tungstate.

12. Acid, sp. gr. 1014; dark-coloured; about one-third albumen on boiling. On dilution, if any difference, sodium tungstate and potassium ferro-cyanide gave better test than picric acid.

Results.—In the above manner I have examined, with careful dilutions, about twenty urines, besides solutions of egg albumin, and have come to the conclusion that the three tests, viz., picric acid, sodium tungstate, potassium ferro-cyanide, are about the most delicate albumen precipitants, and should be reckoned as being about on a par, with preference in favour of picric acid. My experience of acidulated brine makes me place it as somewhat less delicate than nitric acid used as Heller's test, but more convenient, as being less corrosive. In my hands, the new test of Dr. Oliver, potassio-mercuric iodo-cyanide, has been, for some reason or other (no doubt my own fault), a failure. It is not likely to be very generally used, I think, in consequence of the difficulty in preparing it, so that, other things besides albumen should not be precipitated by it. Of potassio-mercuric iodide, I need farther experience before definitely stating my belief as to its use as a precipitant of albumen. It is certainly not superior to the three first-mentioned tests. I consider boiling with the addition of nitric acid a very unsatisfactory test for minute traces of albumen in solution.

Of acidulating the urine.—With all the tests, picric acid, sodium tungstate, potassium ferro-cyanide, and salt solution, it is necessary to acidulate the urine either previously to adding the reagent or together with it, and various acids have been suggested. With the exception of Dr. Roberts' test, in which dilute hydrochloric appears to be the best, citric acid has been recommended as superior to any other. I have tried it in various solutions, and also acetic and tartaric acids. As regards the results, tartaric acid gave a precipitate alone at once, no doubt pointing to the fact that the urine tested contained an excess of potassium salts, and so I gave it up at once. I don't think that if the strength of the acetic acid solutions be properly regulated that it will be necessary to use citric acid, which, as a solution at all events, is so apt to decompose. At present, I confess that, with sodium tungstate and potassium ferro-cyanide, citric acid appears to be superior to acetic for the purpose of acidulation.

Convenience of the tests.—As before remarked, picric acid is

rather an inconvenient colour for showing minute traces of precipitation, and is moreover somewhat expensive. This last is not the case with the other two tests mentioned with it, sodium tungstate being very cheap, and moreover colourless in solution. If, as I believe, a dilute solution of potassium ferro-cyanide may be used, it is almost colourless, and a few drops of the saturated solution will hardly be more coloured. I am therefore inclined myself to the belief that these advantages possessed by the last two tests counterbalance the greater delicacy of picric acid. They all are more convenient than nitric acid, although I imagine that few urines containing albumen will fail to give a ring with the last named when used as Heller's test.

As regards the differences of the coagulating points of some of the urine examined, I add the following table, which may be interesting, read in connection with the paper of Brunton and Power before alluded to :—

Table of Coagulating Points of the Albumen in Twelve Samples of Urine.

	Colour.	Reaction	Specific Gravity.	Amount of Albumen on Boiling and Standing.	Temperature of Opalescence.	Temperature of Complete Coagulation.
1	Clear, pale . .	Acid	1014	$\frac{2}{3}$	149°	153°
2	Pale, cloudy .	Acid	1012	$\frac{1}{3}$	124°	145°
3	Pale	Acid	...	$\frac{1}{2}$—$\frac{2}{3}$	118°	148°
4	...	...	...	$\frac{2}{3}$	125°	140°
5	...	...	...	$\frac{2}{3}$	116°	167°
6	Dark coloured .	Neutral	1028	$\frac{1}{20}$	...	162°
7	Clear brown . .	Acid	1007	$\frac{1}{2}$—$\frac{2}{3}$	126°	153°
8	Light coloured .	Acid	1010	$\frac{1}{2}$	124°	157°
9	Dark coloured .	Acid	1014	$\frac{1}{3}$—$\frac{1}{2}$	130°	160°
10	Light coloured, containing urates . . .	Acid	...	$\frac{1}{15}$	144°	164°
11	Light coloured, clear . . .	Acid	1010	$\frac{1}{5}$	124°	150°
12	Dark, clear . .	Acid	1013	$\frac{1}{3}$—$\frac{1}{2}$	116°	140°

FIVE CASES OF TETANUS,

WITH SOME REMARKS ON ITS PATHOLOGY.

BY

ANTHONY A. BOWLBY.

The following cases have occurred in the wards of St. Bartholomew's Hospital during the past two years, and to Mr. Willett and Mr. Langton I am indebted for permission to make use of them.

Charles F., aged 37, a healthy, strong man, was admitted into St. Bartholomew's Hospital on October 14, 1882, at 8 P.M., with the following history:—

On the 10th he ran a nail into the sole of the foot between the bases of the first and second toes; he pulled it out, and took no further notice of the wound. On the morning of the 14th, at 4 A.M., he was awakened by violent pains in his neck. At 11 A.M. his jaw became tightly clenched, and his condition rapidly became worse.

On admission there was well-marked tetanus; the temperature was 97.8°, respiration 30, pulse 127; there was a marked tendency to opisthotonos and occasional spasms.

At 11 P.M. the wound was thoroughly exposed under chloroform, and some retained pus let out; the edges of the sinus were then cut away; an enema of chloral and bromide of potassium was given, and the patient at 1.30 A.M. was asleep, not having recovered consciousness since the chloroform had been administered.

At 1.50 A.M. a severe spasm suddenly supervened, thoracic breathing almost entirely ceased, and the patient became blue in the face; respiratory movements then ceased entirely, and artificial respiration was had resort to for several minutes before the patient came round.

From this time until 7 A.M. there were frequent and severe

spasms, in almost all of which artificial respiration had to be employed. At 7.15 A.M. the patient died asphyxiated. At no time was there any laryngeal spasm.

The *post-mortem* examination was made thirty hours after death, but with the exception of numerous ecchymosis in the muscles of the back, no pathological lesions were discovered. I made a careful dissection of the nerves going to the toes contiguous to the wound; they did not appear to have been implicated in any way. The plantar, posterior tibial, internal and external popliteal, sciatic, anterior tibial, and anterior crural nerves all appeared entirely natural.

A *microscopical* examination of the same nerves showed an entirely normal structure. More than fifty sections of the spinal cord revealed no abnormal appearances of any kind; neither in the medulla oblongata, in the pons, or in the remainder of the cord were there any signs of inflammatory exudation or atrophy of the branched cells of the grey matter; all the several constituents of the spinal medulla were absolutely free from all pathological change. No organisms of the nature of bacilli or micrococci could be found in some of the blood which was taken for examination after death.

Charles M., aged 30 years, was admitted into St. Bartholomew's Hospital on January 1, 1883. On December 28 he had sustained a slight excoriation of the ear, and the two following days felt ill, and did not go to work. The day before admission his neck and jaws became stiff.

When he came under notice at 2 P.M. on January 1, his teeth were tightly clenched, and could not be separated; the abdominal muscles were rigid, and there was very marked opisthotonos. On the tip of the right ear was a small excoriation; both it and the surrounding integument were painless. At frequent intervals there were slight clonic spasms.

Two hours after admission the patient was brought under the influence of chloroform, and a mixture of chloral and bromide of potassium, as well as beef essence, wine, eggs, and brandy, were administered by the stomach-pump at frequent intervals, in addition to nutrient enemata.

About 2 A.M. the following morning the patient became perceptibly weaker, the breathing more shallow and difficult, and the face blue. At 4 A.M. the anæsthetic was stopped, and half a grain of morphia was injected subcutaneously. He did not again become conscious, but died in the first severe spasm, which supervened at 6.40 A.M.

A *post-mortem* examination discovered nothing of importance. Microscopical sections of the corpus striatum, pons varolii, me-

dulla oblongata, and spinal cord showed typically healthy nervous tissue, without any sign of inflammation or degeneration.

David H., aged 49 years, was admitted into Harley Ward on February 19, 1883. On February 1 he cut off the tip of the middle finger of the right hand. It was strapped by a chemist, and the strapping kept on for a week. At the end of that time he removed it and applied a poultice. He says that he has been out of sorts ever since the accident, and that on the 15th he had stiffness about the neck. The following day his jaws became stiff.

Present condition.—Wound on finger granulating fairly healthily. No pain or tenderness in the hand or fore-arm. Is suffering from well-marked tetanus, with opisthotonos and frequent clonic spasms; jaws rigid; swallowing almost impossible. T. 100.2°. The patient was treated with injections of morphia, but died on February 22, from continued spasm of the muscles of respiration. His temperature ranged between 99.8° and 103°, rising to 107° in the rectum one hour after death.

The *post-mortem* examination revealed an excess of sub-arachnoid fluid, which was slightly turbid, containing lymph, corpuscles, and granules. The arachnoid and pia mater were opalescent. The convolutions on the convexity of the left cerebral hemisphere just above the fissure of Rolando were slightly softened, as were also the corpora striata and the optic thalami. The digital nerves were necessarily divided at the cut end of the finger, and where they were exposed on the ulcerated surface, shared in the general vascularity. The spinal cord appeared healthy. Microscopic examination of the same and of the medulla oblongata revealed no morbid changes. The softened portions of brain showed the appearances which are usually met with in softening from any cause. The digital nerves and those of the fore-arm showed no changes under the microscope.

During life I several times examined the blood and pus from the injured finger, with a view of ascertaining whether any micro-organisms were present, but always with a negative result. The turbid cerebro-spinal fluid was similarly tenantless.

James W., aged 27, was admitted into Pitcairn Ward on March 27, 1883. He had long suffered from a diseased ankle-joint, and the leg was enclosed in a plaster of Paris splint, which had been applied a month previously. The day before admission he noticed some stiffness of the jaw, which was soon followed by muscular twitchings.

Present condition.—There is a foul sloughing sore on the inner side of the ankle, apparently caused by the splint. He is suffering from well-marked tetanus of a very severe type, the spasms being very frequent and violent.

The foot was amputated, and the patient treated with opium, Calabar bean, and chloroform. He died at 12.15 A.M. on the 28th, from spasm of the respiratory muscles. The temperature ranged between 98.4° and 100.5°.

The *post-mortem* examination revealed no change visible to the naked eye, except some ecchymosis, the result of the violent muscular contractions. A microscopical examination of the spinal cord and of the nerves of the lower extremity showed no pathological appearances of any kind.

Charles S., aged 34, a coachman, was admitted into St. Bartholomew's Hospital on November 24, 1880. The carriage he was driving had met with a collision, and he had been thrown off his box into the road. On the right side of his head, over the eyebrow and temporal fossa, was a large lacerated scalp wound about four inches in length, and filled with mud, which was so plastered into the tissues that it was found almost impossible to remove it. The stitches were inserted, but no attempt was made to close the wound, which was dressed with wet lint.

In the course of the next few days there was free suppuration, and poultices were applied. On December 1 the patient complained of slight stiffness of the neck (temp. 99°), and the following day he could not open his mouth naturally, but suffered no pain; the wound and the surrounding scalp were not tender to pressure. During the next week there were scarcely any fresh symptoms, but the abdominal muscles became firm and rigid, and the jaws more stiff. There were no spasms, and the patient swallowed liquids well. Temperature normal.

Since December 3 a mixture containing ten grains of chloral and ten of bromide of potassium had been given every three hours.

On December 13 the patient had two slight convulsions; the following day he could not swallow liquids, and was fed through a tube passed down the nose. His bowels were constipated, but were relieved by a drop of croton oil.

During the next five days there were altogether six convulsions.

On the 18th croton oil was again administered, and the patient was able to swallow, though not in sufficient quantities; he was therefore fed through the nose at frequent intervals. There was never any difficulty experienced in passing the tube for this purpose. There was now marked opisthotonos.

On December 20 he got much weaker, and became partly unconscious. On the evening of the 19th the temperature was 104.4°; on the morning of the 20th 105°.

On December 21 the patient died exhausted at noon, his temperature just before death being 105°. At this time the

wound was nearly entirely healed. No *post-mortem* examination was allowed.

Considering the various morbid appearances which have been described by different authors, I have thought these cases worth recording, inasmuch as, with one exception, no definite lesions were discovered *post-mortem.* That every care was bestowed on the preservation and examination of the nervous tissues I can confidently assert. That the sections were examined by others as well as by myself may lend additional weight to my statements. And as these cases are fairly typical of the course run by tetanus, I have made them an excuse for offering some remarks on the pathology of this disease.

Now, at the commencement it may be as well that I should state that I have no novel theories to start and no specific treatment to uphold; but it has seemed to me that we are far too prone to accept without sufficient questioning the statements made of the neurotic origin of tetanus, the facts which are supposed to support this theory, and the deductions drawn from them. I shall endeavour to prove that the widely accepted doctrine of nerve-injury being the primary cause of tetanus is quite untenable, and not sufficiently supported by facts.

With regard to this doctrine, however, I would remark, that it is extremely difficult to meet with any very definite statements as to the conditions which are supposed to be set up by or in the wounded nerve, but I think that the various theories may fairly be stated as follows.

Tetanus is caused:—

(*a.*) By simple injury of a nerve, the irritation arising from which causes excessive reflex action over the whole body.

(*b.*) By inflammation of a peripheral nerve, excited either by direct injury or spread of inflammation from surrounding tissues.

(*c.*) By injury to a nerve followed by inflammation which spreads to the cord.

Now, if we look for the evidence in support of this pathology, we shall find but very little reward for our pains. The whole superstructure has been built on so shallow a foundation that we can only be astonished it has stood so long.

The first theory, that a simple nerve wound is of itself sufficient to set up tetanus, is manifestly absurd. In every incised wound, in every amputation, either some nerve filaments or trunks, or both, are certain to be wounded; nevertheless, the accidental discovery of an injured nerve has by several authors been gravely recorded as the cause of death in cases of this disease. If, however, it be urged that it is only in cases where the larger trunks

are implicated that tetanus supervenes, I would answer that such a statement cannot be supported by facts. Thus, Weir Mitchell (Injuries of Nerves, 1873) says that he has seen over two hundred cases of gunshot wounds of large nerve-trunks without a single case of tetanus; and in the more rare instances of wounds of nerve-trunks, lacerated or otherwise, such as are met with in civil practice, tetanus is no more frequently seen than in injuries which do not involve such structures.

The second theory, namely, that tetanus results from inflammation of a nerve, is merely supported by such vague statements as "the nerve-trunks appeared more vascular than natural," "the nerves were redder than normal," "the nerves were distinctly congested," and similar loose phrases. Nevertheless, out of more than two hundred cases which I have collected, even such appearances as these were noticed in only 9 per cent.; and of late years, when investigations have been more accurately conducted, the number of such cases has much diminished. Relative to this point I will venture to quote a very significant passage from an article by Dr. J. H. Laurie in the *British Medical Journal* for November 1, 1853, in which he says, "In vol. iv. p. 90, of the *Glasgow Medical Journal*, the results of some post-mortem examinations were published by Dr. Perry, with the view of showing that inflammation of the nerves at the seat of injury, and of the nervous trunks connected with it, was probably one of the existing causes of tetanus. It so happens, however, that I conducted some of these post-mortem examinations for Dr. Perry, and subsequent investigations have shown me that, as far as morbid appearances are recognisable to the eye and the methods of examination then in use, the nerves of a tetanic injury differ in no appreciable respect from those in which that disease has not supervened." Yet there can be but little doubt that statements such as the one here alluded to have laid the foundation for much of the pathology of tetanus.

And what is said of these examinations may, I believe, be said of all. No typical inflammation of a nerve is constantly present in tetanus. On the other hand, I would venture to assert most confidently, that if so-called "inflamed" or "congested" nerves were looked for in patients who die with open wounds from other diseases, they would be just as frequently found as in tetanus. In most cases of compound fracture, of lacerated wounds of the extremities, &c., the nerves participate in the inflammatory changes common to the other tissues, to at any rate a sufficient extent to show a marked redness to the naked eye; yet this reddening appears to be mainly confined to the sheath, and not to affect the more important parts of the

nerve-trunk, namely, the fibres. Such appearances therefore cannot be held to account satisfactorily for the disease in question.

Again, if inflammation of a nerve really be present, we surely should not need to wait for a post-mortem examination to establish the diagnosis. The symptoms of acute neuritis are extremely severe; the pain and tenderness is unbearable, the constitutional condition seriously disturbed, and the inflamed nerve can be felt enlarged, hardened, and tender for some distance along its course. Where are these symptoms in tetanus? It is certain that the wounds which result in tetanus are not painful above all others. But looking at this part of the argument from another point of view, we are tempted to ask, Does tetanus supervene when neuritis is undoubtedly present? And the only answer is a direct negative. Mitchell records numerous cases of acute and sometimes diffuse neuritis, yet without the supervention of tetanus in a single instance. Eichorst (Virchow's *Archiv*, B. lxix.) describes a general diffuse neuritis of apparently unlimited extent. Nepveu writes of chronic inflammation of nerves in stumps; and Rosenbach and Mitchell passed sutures through and injected irritating fluids into the nerves of the lower animals, yet none of these authors found tetanus to supervene.

Moreover, the practice now common in surgery of inserting sutures into divided nerves would surely ere now have resulted in tetanus had nerve section or inflammation or the presence of foreign bodies been a frequent cause of this disease; yet, as far as I am aware, no such accident has been recorded.

The third theory, that tetanus results from an inflammation spreading along a wounded nerve, and so reaching the spinal cord, is so entirely hypothetical and unsupported by any evidence, that for the present it requires no further notice.

Another argument which is constantly adduced in favour of the neurotic origin of tetanus is that cure has been said to follow section of the injured nerve. But here also a great deal of theory has been founded on very little fact. The following are the only cases I have been able to find recorded. It is quite possible that they may be more numerous, but a somewhat lengthy search has convinced me that the total number must really be very small.

Larrey (Mémoires de Chirurgie Militaire, vol. iii.) in two cases divided the tissues forming the floor of very painful wounds, and the tetanic symptoms rapidly disappeared. The object of the operation was to divide some wounded nerves which he believed were keeping up the irritation.

Dr. Murray (*Medical Gazette*, February 9, 1833) records a case in which section of the posterior tibial nerve for tetanus following on a wound of the foot resulted in recovery.

Samuel Wood (*British Medical Journal*, July 4, 1863) divided the saphenous nerve in a case of tetanus of a very mild nature, which resulted from a compound fracture of the leg. The patient recovered.

Drs. Basi and Marinelli (*Lancet*, May 1873) divided the musculo-cutaneous nerve for tetanus following a gunshot wound of the arm. The patient recovered.

Mr. F. S. Edwards (St. Bartholomew's Hospital Reports, vol. xvii.) records an instance of recovery following on division of the short saphenous nerve, the original injury being a dirty lacerated wound of the heel followed by sloughing.

Sir J. Fayrer (*British Medical Journal*, October 10, 1863) details a case of a lacerated wound of the hand, followed by an apparently slight attack of tetanus on the fourth day from the injury. Four days later the median nerve was divided, and the patient recovered.

The same surgeon at the discussion which followed on Dr. Coats' paper on tetanus (Med. Chir. Soc. Trans. vol. li.) said that he had seen three cases in which tetanus had been arrested by section of the median nerve. I have not, however, found any details of others than the one first described.

It thus appears that but nine cases of recovery can be said to have followed on nerve-section; but in some of these I believe it would be more accurate to say that it had occurred in spite of the neurotomy. Looking at the cases *seriatim*, we shall, I think, come to the conclusion that adequate proof is wanting as to the efficacy of the treatment advocated.

In each of Larrey's patients it is very doubtful if any nerves at all were divided. Very likely they were; but the author's chief reason for believing so was the fact that the wounds were very painful, and traversed the course of certain nerve-trunks.

Dr. Murray's case, though so frequently quoted, is quite unlike any other example of tetanus with which I am acquainted. The patient, a lad of fifteen, ran a nail into his foot, and after keeping a night-watch on board ship, had great stiffness of the jaws and neck next morning. Within a few hours, and without waiting for any further symptoms, the posterior tibial nerve was divided, with the result that the patient was at once relieved from all symptoms. That this was not a case of tetanus at all, but only of trismus, there can, I think, be no doubt. To Dr. Murray's statement that the nerve was "twice as large as natural, but of normal colour," I should attach no importance; for I am well

aware that nerves exposed during life do really appear larger than in the dissecting-room.

In Mr. Wood's case the division of the nerve was indicated by pain and tenderness in its course, and the patient certainly appears to have derived benefit from the operation.

In the case recorded by Mr. Edwards the tetanus was more marked and the spasms more violent twenty-four hours after the operation than previously, and recovery was not completed for a fortnight; the patient was in addition treated by frequent doses of chloral and a Chapman's spinal ice-bag. Under these circumstances I should be very unwilling to accept this as a case of recovery from nerve-section; it appears most likely that this part of the treatment had no hand in bringing about such a fortunate result.

Much the same remarks apply to the case detailed by Sir J. Fayrer. In addition to the division of the median nerve, several splinters of wood were removed from the wound, and the spasms continued some days after the operation. Large doses of opium, Indian hemp, and chloroform were also administered. Who, then, shall say to which of these various remedies belongs the merit of the result? The two other cases by the same author do not admit of criticism, for there are no data on which to work.

The patient of Drs. Basi and Marinelli suffered from tetanus for three days after the neurotomy, but it is not stated whether any other treatment was employed.

I would therefore submit that the recorded cases of tetanus treated by neurotomy are far too few and too doubtful to afford any material support, and much less to prove the neurotic origin of this malady. As is so often the case, the constant reiteration of a single case has led to the belief that a cure has been far more frequently the sequel of neurotomy than really appears to be the fact; and I venture to think that the argument, that such a result follows neurotomy, cannot fairly be held up as proof of the theory that tetanus results from neuritis.

With regard to the more recent treatment by nerve-stretching, accounts are so much at variance that it is difficult at present to arrive at any definite conclusion. I may, however, say that I have not seen the accounts of a single case in which cure could certainly be attributed to this procedure, though I am inclined to believe, on the other hand, that it has in one or two cases accelerated a fatal ending.

But if the disease really were of peripheral origin, the division of the nerve-trunks ought to provide a *certain* means of cure. Not only, however, is this not the case, but even such complete isolation from the injured part as is afforded by amputation does not give much more satisfactory results. I am well aware

that it has been argued that when neurotomy fails it is because the treatment has been too long postponed, because the disease has become "generalised" and is no longer local. I can only confess my inability to understand such logic until it can be clearly shown that it is possible for such excessive and widely diffused reflex action as is present in tetanus to remain, when the existing cause has been removed. The theory which assumes such a pathology is entirely without a physiological basis.

Such, then, is a very brief sketch of the chief *facts* brought forward to prove the neurotic origin of the disease; and in continuation of the arguments I have already brought against their acceptance as sufficient proof, I shall turn very shortly to some further objections of a theoretical nature.

Were it true that tetanus is due to peripheral irritation, we should certainly expect to find it caused by many other varieties of irritants; for cases are occasionally met with of wounds and scars so hyperæsthetic that the slightest touch causes extreme pain; and, more especially when the bulbous end of a previously divided nerve is exposed, even epileptiform fits may result from any external irritant. Again, if peripheral irritation and consequent excessive reflex action could account for tetanus, surely the first symptoms ought to be noticed in the injured part. If the leg were damaged, it ought most certainly, according to all physiological laws, to be the first part affected by spasms; yet, as a matter of fact, the muscles of the neck and jaws are almost invariably the earliest to become contracted.

As regards the supposition that tetanus may be due to inflammation spreading along the course of a nerve-trunk and thus reaching the cord, I have already stated that there are no facts to support such a theory; and it is notable that the only pathological lesions which have been described were almost limited to the medulla oblongata and pons, whereas, if the above be true, such changes ought to be most marked *in that part of the cord from which the wounded limb obtains its supply of nerves.*

But if tetanus is not due to local irritation or to implication of nerves, to what cause is it to be attributed? I am in no way disposed to give any definite answer to such a question, for I do not think that, in the present state of our knowledge, it is warranted. Yet it seems to me that there are many facts which render it extremely probable that that disease is due to some constitutional condition, some variety of blood-poisoning; and, without attempting to draw any conclusions, I shall content myself with indicating such points as appear to be favourable to this theory. Many of them, no doubt, have been noted by other writers already. Firstly, the occasional but undoubted idiopathic origin of this disease seems to show that local injuries are not essential

for its production. Next, the remarkable fact of its extreme prevalence in certain climates, and especially in certain localities, would lead to the conclusion that it is independent of the injury of any special tissue, whilst this endemic condition puts it partly on a level with such undoubtedly constitutional states as malaria, ague, &c.

The fact that it attacks by preference the coloured rather than the European races points in the same direction. The effects of temperature, and more especially of exposure to cold and wet, are scarcely conditions which could exercise much influence in the production of a disease of local origin, whilst it is quite possible that such might be favourable to the absorption or formation of some local *materies morbi.*

I do not think that enough attention has been paid to the wound, for in a very large number of recorded cases it has been found in a very unhealthy state, either inflamed, sloughing, gangrenous, or containing retained pus. Thus in 143 cases, taken in succession from the medical journals, in which the state of the wound was mentioned, in 68 it was in one of the above conditions. I am quite aware that many observers have stated that the condition of the wound bears no relation to the onset of tetanus, but I can scarcely conceive that the high proportion of unhealthy wounds above recorded is a mere coincidence, whilst the cases I have seen myself tend entirely to corroborate such an opinion.

And while speaking of the condition of the wound, it may be noted that much stress has been laid by some observers on the occasional presence of foreign bodies in the injured part. These have generally been considered as likely to cause tetanus by exciting irritation and inflammation of the contiguous nerves; but I would suggest that any influence they may exercise is more likely due to the fact that wounds in which foreign bodies are embedded are rarely in a healthy state.

On the other hand, I would mention a case very recently operated on by Mr. Morrant Baker at St. Bartholomew's Hospital, in which a man received a lacerated wound from a ramrod in the fore-arm, and amputation being performed, more than two years later a splinter of considerable size was found deeply buried in the median nerve. Yet, despite the constant irritation of the nerve for so long a period, no tetanus supervened, though if ever there was a nerve injury likely to cause tetanus, surely this was such.

Another argument in favour of the constitutional nature of tetanus is the fact that it occasionally appears to occur in epidemics, and under circumstances similar to those which we know to be favourable to the development of some of the other

forms of blood-poisoning, namely, overcrowding, bad ventilation, and other varieties of faulty hygiene. Thus at one time in the American war over fifty cases occurred in rapid succession in the hospitals at Washington and Fredericksburg. One operator in Germany lost seven patients from this disease after ovariotomy, and I have recently been told of three patients all dying of tetanus after similar operations in the same ward. But of all the varieties of tetanus, that which brings the strongest evidence to bear on the constitutional origin of the malady is "tetanus neonatorum." Firstly, it is markedly endemic; secondly, it attacks by preference the children of coloured people; thirdly, the umbilical cord is frequently in a sloughy or otherwise unhealthy condition; and, lastly, it has been shown most clearly that it is almost entirely dependent upon bad hygienic conditions. The influence of this latter has been so fully demonstrated by various authors, more especially by Dr. Joseph Clarke of Dublin, that it is unnecessary for me to insist upon it any further; while the *absence of all spinal nerves from the umbilical cord itself* renders it impossible that nerve lesion should play any part in the causation of this disease.

Lastly, the high temperature occasionally noted lends aid to the theory of the presence of some morbid material in the body; for the fever is certainly not the result of the spasms, or it would be present not only in a larger number of cases of tetanus, but also in uræmic convulsions, puerperal eclampsia, and other similar diseases.

As regards the *post-mortem* appearances of tetanus, I think there can be no doubt that no one lesion is constantly present in all cases. Drs. Dickenson, Lockhart, Clarke, and others, have described and figured most extensive lesions of the spinal cord, and it is the very extent of the same that makes it almost impossible to accept them as pathognomonic of tetanus. The damage inflicted upon the cord, according to these authors, is so extensive, that it is certain that had the patient survived considerable paralysis must have resulted; yet in those patients who have been fortunate enough to recover no paralysis has ever been noticed.

Other observers, and more particularly Dr. Coats, have described perivascular accumulation of leucocytes and atrophy of the nerve-cells of the cord. In all the cases I have examined the spinal cord has been entirely and typically normal. In one case the motor parts of the brain were congested and softened, as already described. It is therefore a fair conclusion to draw that acute traumatic tetanus *can* prove rapidly fatal without affecting the nervous centres to any obvious extent. Now such

post-mortem results are quite compatible with the theory that tetanus is due to some poisonous material circulating in the blood. It requires no great stretch of imagination to suppose that such a poison might, like strychnia, have a selective action on the nervous centres, or on particular parts of the same. It is also a perfectly fair suggestion that, as in the case of the drug just mentioned, the poison might act in a purely functional manner, or else might induce changes in the tissues, either by its direct action upon them, or else by the excessive functional excitement induced. The suggestion which has been made (and which is a sort of compromise with the neurotic theory), that the poison may be absorbed along the course of or by the nerve-trunk, is negatived by the facts, that the first symptoms do not point to an early affection of that part of the cord from which the nerve springs, and that there is no correlation between the part injured and the seat of any *post-mortem* changes when such are apparent. What may be the nature of the *materies morbi*, I do not pretend to say. I have been unable to discover any trace of it by microscopic examination, but this in no way proves its absence; and while I should be the first to admit that the pathology I have suggested is as yet hypothetical, I believe it is by directing our investigations in this direction, and by rejecting, for want of all reasonable proof, the theory of the neurotic origin of tetanus, that we shall be led to a proper understanding of a disease which up to the present has baffled the skill of both surgeons and physicians.

One more suggestion and I have finished. The similarity between tetanus and hydrophobia has already been pointed out by more than one author. I have drawn attention to the frequently unhealthy condition of the wound, and the fact that it may, at the time of the onset of tetanus, either be healthy or healed, appears, at first sight, to militate against the suggestion that some morbid process is taking place in it. It is, however, quite possible that, as in hydrophobia, a varying length of incubative period may elapse between the inoculation and the commencement of the symptoms, and an explanation is thus afforded of the failure which generally follows amputation. The poison has been discharged into the system at some previous period, and removal of the seat of inoculation comes as a rule too late. But seeing that as yet all this is mere surmise, the practice of thoroughly attending to the state of the wound is deserving of every recommendation.

NOTES

OF THE

PROCEEDINGS OF THE INTERNATIONAL COLONIAL MEDICAL CONGRESS AT AMSTERDAM IN 1883.

BY

DYCE DUCKWORTH, M.D.

No account of the first Intercolonial Medical Congress having been published in any British periodical, it seems fitting that some record of the proceedings should be made; and having had the honour to represent at this meeting the Royal College of Physicians of London as well as the Colony of New South Wales, I propose to give a short account of the work that was done at Amsterdam in September last.[1]

Elaborate arrangements for the conduct of the meeting had been made by a Comité d'Organisation, with a Central Bureau, for some months previous to the opening on the 6th of September. Professor Stokvis of Amsterdam was president, Dr. A. A. G. Guye, aural surgeon, was vice-president, and amongst the members of the committee were the leading naval and military surgeons of the Netherlands and of the Dutch East and West Indian possessions, as well as several eminent professors of the universities.

The meetings were held in a large scientific institution known as the Felix Meritis, situated centrally in the city. A fee of ten florins procured the diploma of membership, and students were admitted for a quarter of that sum. The official language of the Congress was French. Under the direction of the president, a large share of work fell especially upon Dr. Guye and the honorary secretary, Dr. Van Leent, the head of the naval medical

[1] My co-delegate from the College of Physicians was Deputy Surgeon-General Joseph Ewart, M.D., formerly Principal of the Calcutta Medical College, and the Colonial representative of New South Wales was Dr. Sydney Jones of Sydney.

department. The meeting lasted for three days, and one hundred and seventy members entered their names.

The idea of this Congress arose in connection with the International Colonial Exhibition which was opened in May, it being thought advisable to hold a meeting of colonial medical men to discuss subjects which specially interested them. It was the first of its kind, regarded with much anxiety by its promoters, and certainly eminently justified by its results.

It was arranged that general meetings should be held daily, and that the sections should meet also each day in their respective halls. There were two sections: (1.) That of Climatology, Medical Geography, General Pathology, and Hygiene; (2.) That of Special Pathology and Therapeutics.

An informal reception to the members of the Congress was held in a part of the Exhibition buildings on the evening of the 5th September, when "*vin d'honneur*" was handed round, and addresses of welcome were delivered by several authorities of the Exhibition.

The Congress was opened publicly in the presence of the Burgomaster and civic authorities. A number of vice-presidents were nominated, representing all nations possessing colonies. The British representatives were Sir Joseph Fayrer, Dr. Ewart, Professor de Chaumont, Dr. Lewis of Netley, Dr. Sydney Jones, and Dr. Cutts of Melbourne. Professor Stokvis delivered the opening address. He maintained that it was especially fitting to hold the first International Colonial Congress in Holland:—"C'est la circonstance que la Hollande se peut nommer avec fierté la terre classique, la première qui a vu éclore la médecine coloniale, et que dès-lors elle représente peut-être le sol le plus approprié pour le succès du premier Congrès International des médecins des colonies." He gave full credit to Spain and Portugal as amongst the earliest colonising countries, instancing the work of Garcia de Orta, the physician of the Portuguese viceroy of Goa, who in 1563 described the medicinal plants of the East Indies, unknown previously in Europe, and was the first author to describe accurately the malady known as cholera. His book was translated into Latin by Clusius, one of the first Professors of Botany at Leyden, and thus made available to a larger field of students. Clusius added to the work by further describing the plants and roots brought to Europe by Francis Drake. Alluding to the writings of Monardes, Christofel a Costa, Frajoso, Ximenes, Prosper Alpini of Padua, &c., he showed that the honour of the first colonial medical treatises proper belonged to the Dutch of the seventeenth century, in particular to Jacobus Bontius and Guilielmus Piso. He gave full details of the labours of each writer

respectively in the Dutch East and West Indies, and maintained that they were the two founders of colonial medicine. His address ended with a warm tribute to the exertions of all who strove to advance science in the colonies, and included an encomium on Darwin, many of whose observations had been made in Australia.

At the general assemblies, held in the afternoons, certain members, who were detailed months beforehand, delivered addresses upon special subjects.

On the first day Dr. J. J. Da Silva Amado, Professor of Hygiene in the Lisbon Medical School, read a paper on "Hygiène des Professions, Cultures, et Métiers Insalubres dans les Colonies." His "conclusions" were placed under eleven heads, and expressed his views as to the best methods in which intellectual, military, mechanical, and open-air labours should be conducted in various climates, giving special recommendations as to hours, food, clothing, and hygiene generally. He advised shorter hours both of mental and bodily work in hot climates, and insisted upon a break of one or two months for the intellectual toiler in the tropics, such vacation being taken, if possible, amongst the mountains. Marches by moonlight were recommended for troops in hot countries instead of by day, but nothing was mentioned as to special virulence of malarial poison in many countries at this period. Refrigeration of the air in manufactories and workshops was strongly urged.

Another communication was made by Dr. G. Van Overbeck de Meijer, Professor in the University of Utrecht, "Sur la Colonisation Européene dans les Pays Chauds," in which it was stated that European colonisation in the plains of hot countries distinctly led to premature death amongst the cultivators of the soil; that the women faded and aged prematurely, and were supplanted by native women, and hence the race could not be maintained pure; that European colonisation was possible at a height of 1000 to 1500 metres above the sea-level, if virgin soil and forests were undisturbed, but that even here women would not thrive.

The last paper read was on "Acclimatement et Acclimatation," by Dr. H. Rey, Principal Medical Officer of the French Navy at Toulon. He placed the limits for resistance to the injurious effects of tropical climates at from two to three years, but with due regard to hygiene he believed it possible for white races to become acclimatised.

An interesting discussion followed, in which Sir Joseph Fayrer and Dr. Lewis took the principal part, the former declaring that he had seen the fourth generation of Europeans in India, but

that the third was manifestly degenerated and enfeebled. He believed the colonisation of India or of any part of the tropics by Europeans to be impossible.

Dr. Lewis called attention to the fact that the Lawrence Asylum in the hills, near Simla, for the children of European soldiers serving in India, had proved a failure. Even with this good climate the inmates did not thrive, and the scheme, though well carried out, had been disappointing.

On Friday, the 7th September, the sections met in the forenoon. Professor MacGillavry, of Leyden, presided over that of Climatology, Medical Geography, General Pathology and Hygiene, with M. Cochius and Dr. Gori as secretaries.

A communication was read by Dr. B. Carsten, Inspecteur-Adjoint du Service Médical à la Haye, "De la Phthisie dans les Colonies et les Climats Tropicaux," in which he maintained that pulmonary phthisis was more frequently seen in tropical than in temperate and cold climates; that the tropics were fatal to the phthisical of temperate and cold climates; and that the frequency of phthisis in the tropics diminished at certain altitudes.

Other papers were read "On the Drainage of the Soil by Eucalyptus," by Dr. Bonnafont of Paris, "On the Transport of Sick and Wounded by Railway in Tropical Climates," by Dr. M. W. C. Gori, Professeur Agrégé à l'Université d'Amsterdam. In this paper special carriages and arrangements were described and recommended as suitable for the rapid removal of sick and wounded from the battlefield.

Dr. Charles Landré, of Brussels, read a paper "On the Contagion of Leprosy," and another was communicated by Dr. Van der Heyde, Chef de l'Hôpital et de l'École Médicale a Kobé (Japan), "On the Rôle of Microbes in the Formation of Living Organisms."

In the Second Section—Pathology and Special Therapeutics—Dr. Guye presided, with Dr. P. Kok Ankersmit and M. Van Mansvelt as secretaries. I had the honour to be appointed a vice-president of this section. The first communication was by Sir Joseph Fayrer and Dr. Joseph Ewart, "Du Traitement des Maladies Exotiques et Tropicales dans les Climats Modérés." This was a lengthy and exhaustive paper, which embraced the following topics: (*a.*) On the management of malarial poisoning and prolonged exposure to tropical heat; (*b.*) Congestion of the liver; (*c.*) Abscess of the liver; (*d.*) Malarious or tropical anæmia; (*e.*) Pernicious anæmia; (*f.*) The consequences of sunstroke and thermic fever in persons who have returned to Europe after prolonged sojourn in India or other hot climates. The second paper was read immediately after this, and both

were discussed together. The subject was "The Treatment of Chronic Dysentery and Diarrhœa in those who have returned to Europe from the Tropics," by Dr. A. le Roy de Méricourt, of Paris, Principal Medical Officer of the French Navy, and Dr. A. Corre, of Brest, of the same service.

Sir J. Fayrer's and Dr. Ewart's paper embodied all the best knowledge attained on the treatment of tropical maladies, the subject of hepatic abscess being very fully considered. M. de Méricourt's paper dealt chiefly with the treatment of inveterate dysentery, and stress was laid upon the peculiarities attending those cases which depend on the special diathetic peculiarities of the patient. This is a subject too much lost sight of, in my opinion, in respect of all so-called tropical maladies, and it has yet to be worked out. It is certain, I believe, that some persons are more than others prone to suffer from dysentery, and some from hepatic abscess; and to mention only one diathesis, the strumous, it has been shown that it seems to predispose to dysenteric trouble more than other habits of body. It can hardly be doubted that strongly modifying influences are exerted by special diatheses, in good or bad directions, in regard to the workings of malarial poison and tropical influences generally. Sir Joseph Fayrer directed special attention to the great value of *an absolute milk diet*, with or without lime-water, in chronic diarrhœa and dysentery, and insisted on no animal broths or farinaceous food being combined with it, quoting the best results from rigid pursuit of this diet, without any medicinal treatment.

M. de Méricourt alluded to the value of bismuth, and in the discussion I urged the employment of this drug in doses much larger than commonly given, viz., half-drachms, or even more. Professor Stokvis considered that the effects of bismuth were purely topical and mechanical, and in view of the costliness of the drug, suggested that some cheaper and equally efficacious remedy might be found.

M. de Méricourt particularly recommended arseniate of soda in the treatment of tropical anæmia and intermittent fever, and the value of chloride of ammonium in some cases of hepatic enlargement was testified to both by Sir Joseph Fayrer and myself. A short paper was then read by Brigade-Surgeon J. Barclay Scriven, of London, formerly of Lahore, on "The Treatment of Malarial Fevers by Subcutaneous Injection of Quinine." Mr. Scriven had treated over 100 cases of fever which were uncontrollable by ordinary methods in both Europeans and natives with much success. Buzzard's syringe was used, and Dr. Aitchison's solution of sulphate of quinia—60 grains, with 30 grains of tar-

taric acid, and distilled water to 3 fluid drachms: 15 minims containing 5 grains. For an adult 20 minims was the ordinary injection into the back of the forearm. A little inflammation was apt to follow, and very rarely sloughing or other bad result. Tinnitus aurium never followed. The cases best suited for this practice were those in which quinine by mouth and rectum had failed to stop the fever, in which the stomach or rectum were very irritable, and great disgust for the drug existed; those in which large and repeated doses were required, or in which nervous symptoms were produced by the remedy, and cases in which death was imminent, and a rapid and decided effect was desirable.

Professor Stokvis thought that less severe local trouble followed the use of a solution of quinine prepared with hydrobromic acid, and I mentioned that this solution had been found in England to be the least irritant and most effectual, and had been issued at my desire to the medical officers of the Southern Mahratta Railway Company in India.

In the afternoon papers were read in the General Section on the subject of Quarantine. These were the most important and engrossing communications made before this Congress. A full account of the discussion which ensued having been already rendered[1] in a report on the Congress made to the Royal College of Physicians by Dr. Joseph Ewart and myself, it may suffice in this place to give a short outline of it. It was, practically, a conflict between the "*quarantenaires*" and the "*anti-quarantenaires*," the British delegates unanimously taking the latter side, and the Continental authorities the former.

Professor De Chaumont of Netley introduced the subject, and argued forcibly against the institution of quarantine, maintaining that unless it was carried out with complete rigour, it would always be useless; that the history of quarantine was the history of failure; and that it had never been thoroughly carried out, either by land or sea, in consequence of cupidity and adventurous spirit. Epidemics did not always follow human intercourse, and the best protection against them was hygiene, which would afford no soil upon which they could propagate themselves.

Dr. Van Leent read the second paper on the subject, and argued for the rigorous maintenance of quarantine, alleging that it had never failed if thus carried out. He recommended the adoption of an "*international system of notification, and an international patente* (*license*) *of health*," as unanimously agreed to by the International Sanitary Congress at Washington in 1881, and suggested that the several pestilences against which

[1] October 25, 1883. Vide *Med. Times and Gazette*, Nov. 3, 1883, p. 511.

quarantine was called for, should be studied and attacked at the site of their outbreaks by commissions of international experts.

M. Kruyt, Consul-General for the Netherlands at Djeddah, sent a communication upon the imperfect hygienic measures employed in the case of the Hadjis who thronged that port, and advised a revision of the quarantine regulations of the Red Sea at the hands of an International Executive Commission, which should be established in Egypt, the present Sanitary Councils of Alexandria and Constantinople, bodies which were useless and obstructive, being dissolved.

Professor Amado of Lisbon and M. De Méricourt of Paris read communications warmly supporting quarantine as a protective measure. M. Boissevain, of Amsterdam, chairman of the Nederland Steamship Company, spoke strongly against quarantine, which he described as "a tyranny tempered by backsheesh." Surgeon-Major Timothy Lewis, Dr. Ewart, and Sir Joseph Fayrer emphatically condemned it, and expressed their opinion with respect to cholera, the only malady about which in England there was any need for concern, that both in its endemic and epidemic forms the malady was not contagious, and that, therefore, quarantine was not only useless, but vexatious, cruel, and mischievous.

On the 8th of September, in the Section of Climatology, a paper by Dr. Norman Chevers, C.I.E., was read by Professor Stokvis, entitled, "Des Modifications que subissent Certaines Maladies, et en particulier les Maladies Infectieuses sous l'Influence des Climats Tropicaux."

This communication was of extreme interest, and eminently valuable as affording the careful observations of the author during a long and brilliant Indian career. The difference in the prevalence of diseases on the continents of Europe and India were first discussed. The chief causes of difference were shown to depend upon climate, great and sudden variations of temperature, excessive heat, soil, food, clothing, modes of life, and the constant prevalence of malaria and cholera influence. Dr. Chevers maintained that the majority of deaths in India were due to malaria, cholera, and intestinal fluxes.

Scarlatina was of recent appearance, did not occur *de novo*, and had not been observed in Bengal proper. It was occasionally imported by troopships. Japan was entirely free from it. In the interior of Brazil it first appeared in 1881. There was no evidence of its occurrence amongst the natives of India.

Typhus fever.—It was not proved that this disease had occurred in India.

Enteric fever was probably met with in India previous to the time of observers now living, and was known in 1838.

Relapsing fever occasionally appeared as a deadly epidemic.

Elephantiasis and filaria sanguinis hominis occurred in swampy places in India only within the influence of the sea-breeze, and it was open to question whether they ever originated beyond the habitat of the mosquito and its congeners.

Erysipelas was very rare in Calcutta till 1865, when fatal cases occurred from time to time in the Medical College Hospital. In 1873 a wave of erysipelas invaded Calcutta, and caused constant anxiety to the surgeons. Dr. Chevers predicted the occurrence of puerperal fever in the obstetric wards in consequence, and this proved to be the case in a few months' time. (No remarks were made on the subject of tetanus, which is so frequent after operations on natives. When in Bombay in 1880, I learned that this was certainly the case in the hospitals of that city.)

Acute rheumatism and its complications was met with, distinctly marked, but rarely in Lower Bengal.

Gout had not been observed amongst the natives of India, and was very rare amongst European residents. (My own experience for seventeen years, in connection with the *employés*, of all ranks, in several large Indian railways, does not agree with the latter observation.)

Scirrhus was of very rare occurrence among natives and Europeans.

Struma was decidedly rare in India, and Dr. Chevers had never seen a case of scrofulous glandular disease which originated there.

Rickets was very rarely seen, perhaps because few but the fittest survive.

Scorbutus.—A taint of land-scurvy was common, and should be looked for in treating all severe diseases amongst natives and Europeans. It should be anticipated in all protracted campaigns both amongst officers and men, and was common amongst the native poor all over India, and especially in the provinces of Behar and Scinde.

Bronchocele was extremely prevalent in Tirhoot and at the foot of the Darjeeling Himalayas, even occurring in goats. Also in Assam young children were affected, and cases were met sparsely in the plains of India.

Phthisis pulmonalis was common in hospital practice, especially in the cold season, but far less frequent, both amongst natives and Europeans, than in Europe.

Dr. Chevers believed that any one arriving in Lower Bengal

with healthy lungs, and living prudently, was secure from phthisis while residing in that country.

Idiopathic abscess of the liver was not accounted for by malaria, intemperance, dysentery, portal pyæmia, or by tuberculosis, and the influence of tropical heat was regarded as essentially causative.

Urinary calculus was very prevalent among the attah (wheat-flour) eating natives of Upper India, but rare among the rice-eaters of Lower Bengal.

Lathyrism, palsy of the lower limbs caused by eating dâl of *Lathyrus sativus*, prevailed extensively in Upper and Central India, especially near Allahabad and in Upper Scinde. Cases were also met with in the Jurjura mountains of Algeria by M. Proust. (A communication was also made to the International Medical Congress in London in 1881 by Dr. Brunelli of Rome on the subject of spasmodic tabes dorsalis, induced by diet consisting chiefly of bread made of flour of the *Lathyrus cicera*, amongst the natives of Alatri, a province of Rome. *Vide* Transactions, Sect. of Medicine, p. 45.)

Leprosy was still met with as an Indian disease. Large experience of it led Dr. Chevers to believe that the malady was incurable, although capable, by hygiene and good treatment, of much amelioration.

Molluscum (fibroma) occasionally produced extreme deformity.

Delhi boil and Aden ulcer were not developed in Europe. (Aleppo "button," met with in Algeria and in the Levant, is probably closely allied.)

Yaws was believed to exist in Ceylon in a bad and chronic form.

Nearly all the skin-diseases of Europe occurred in India, but were often so modified by temperature, as in *Lichen tropicus* and *furunculus*, by locality—as in Malabar and Burmah itch,—and by other circumstances, that it was much to be desired that accurate portraits were furnished of all Indian skin-diseases.

Other communications were read by Dr. Bonnafont of Paris, "Pourquoi les Fièvres dites Pernicieuses offrent plus de Danger dans un Climat Tropical que dans un Climat Modéré;" by Dr. Catrin of Algiers on "Modifications Apportées à la Syphilis par les Pays Chauds," and by Dr. De la Faille of Leeuwarden "Sur l'Influence Physiologique et Thérapeutique du Climat." Dr. E. M. Van Lier of Soerabaya also read a paper "On the Genesis of Cholera," in which he propounded a theory that the disease was due to some subterranean volcanic disturbances. Sir Joseph Fayrer pointed out that in the parts of Bengal where cholera

was endemic no evidence of such influences had ever been recorded.

In the afternoon of the 8th September papers were read in the General Section on the subject of education of medical men for colonial service by Colonel B. E. J. Becking, formerly head of the Netherlands East Indian medical service at Utrecht, and by myself. The former related exclusively to the training of colonial surgeons for the Dutch service in the East Indies, and the latter had reference to the special education required by colonial practitioners, and to the protection which should be afforded to them by the Home or Colonial Governments. The following were some of the recommendations I made:—

1. That the general and professional education of students for colonial service should be as complete as possible, and adapted to the capacities of men of good ordinary ability.

2. That candidates should be attracted towards a colonial career by the establishment every year of at least two scholarships in literature or science, which should be competed for in turn in the several universities; that these should be provided by the Colonial Office, and be each of the value of £120, or sufficient to defray the cost of a complete medical education, the successful candidates being pledged to serve in some colony.

3. That chemistry and physics be especially studied, and that anatomy, physiology, and botany be not over-minutely pursued. As accessory studies, geology and physical geography were recommended.

4. That at least three months of special instruction be had in the following subjects:—Ophthalmic surgery, diseases of children, and diseases of the skin, and that proficiency in obstetrics and the practice of vaccination be demanded.

5. That practice by uneducated natives be discouraged, and that no persons be permitted to practise whose diplomas may not be registered in the mother-country.

6. That Europeans should not establish themselves in the tropics to practise before the age of twenty-three or twenty-four years is attained.

Professor Van den Corput of Brussels made a short communication in which he recommended the study of medical geography in relation to pathological ætiology of such maladies as cancer and tuberculosis, the institution of an international medical board to study epidemics, and the best means of limiting or preventing them, also the issue of internatioual nosological bulletins. He suggested an inquiry into the causes of drunkenness, the ailments resulting from this, and the best means of checking alcoholic abuse. Lastly, to determine the influences which the

progress of modern civilisation had exerted on the nature and treatment of diseases.

The Congress was formally closed by Professor Stokvis after an eloquent speech.

At the Municipal Hospital on the following morning several members attended to hear a lecture by Professor Stokvis on the subject of splenic enlargement as a constant attendant on all forms and degrees of icterus. He believed this change was due, not to mechanical causes, but to the profound blood-change induced by the presence of bile-products in the circulation.

Professor Pel demonstrated a case of enormous hydatid tumour of the liver in a young peasant woman from the country near Amsterdam, and another of severe so-called idiopathic pyæmia.

Professor Scheube, of Leipsic, showed a case of beri-beri in a young Javanese, and explained his views on the nature of the disorder, which he had studied in Java. He believed that it was not a mere nutritional defect, but a miasmatic infectious malady. The patient was aged about 20 to 25 years, and very emaciated. The skin of the lower extremities was covered with white scales, not closely set, but which shone out against the swarthy integument. Much pain was caused by gentle pinching of the muscles of the calves. The plantar, knee, and cremasteric reflexes were lost. The disorder began with pain in the limbs, and commonly followed on exposure to cold. Thus native (barefooted) troops suffered when quartered in barracks paved with stones, being wont to go on the ground.

Professor Scheube's examinations showed that the lesion was an ascending neuritis, the muscles also partaking in the inflammatory changes. He proposed the term *Neuritis multiplex endemica.*

Professor Stokvis remarked that Jacob Bontius had suffered for four months from this disorder, and was probably the first writer to describe it.[1] The gait becomes ataxic. Anæmia and dropsy follow in severe cases.

During the Congress the members were free to visit the International Colonial Exhibition and all the public and private galleries in the city. The various delegates were twice entertained with great hospitality by the Comité d'Organisation, and on the evening of the 8th September a "*banquet d'adieu*" was held, when many complimentary speeches were made.

The British and Colonial delegates entertained the committee at a banquet, together with the foreign delegates, and a large

[1] An Account of the Diseases, Natural History, and Medicines of the East Indies, 1629. (Translated into English. Lond. 1769.)

number of the members were taken by a special train to Leyden, the Hague, and Schevening. In all these places they were courteously received and entertained by the local medical authorities. Nothing could exceed the kindness and good feeling everywhere manifested.

The greatest credit was due to the organising committee for the excellence of their arrangements.

The greatest courtesy and *camaraderie* everywhere prevailed; and if there is sometimes inducement to scoff at such gatherings, and to allege that they "attack the stomach more than the intellect," it cannot be denied that they encourage and widen sympathy, and that they create and cement useful and lasting friendships. They witness to the fact that sentiment cannot be displaced from human motives, and they help to lighten the hearts and relieve the burdens of men who are doing part of the world's work in well-appointed ways.

I may mention, lastly, that there was a very general wish expressed that, in a few years' time, the second Intercolonial Congress should assemble in London.

TWO CASES OF EXTIRPATION OF THE UTERUS AND OVARIES FOR CANCER,

UNDER THE CARE OF DR. J. MATTHEWS DUNCAN AND MR. WILLETT.

BY

JOHN MASON, M.B.

It is much to be regretted that cases of rare operations are often not published; therefore I think no apology is needed for the following communication. I am indebted to Mr. Willett for leave to publish the notes, for his kind assistance, and for the remarks under his name at the end of the paper.

CASE I.—*Extirpation of Uterus and Ovaries for Epithelioma of Cervix, by the Abdominal Operation.*

Emily F., 34 years of age, single, a domestic servant, was admitted into Martha Ward on December 11, 1881, under the care of Dr. Matthews Duncan.

Her catamenia began at fifteen years of age, and were always regular. Fourteen months ago she began to lose blood between her proper periods, and during the same time she had pain in the lateral and lower regions of the abdomen. She had been losing flesh for the last twelve months.

On admission, she appeared fairly healthy, but rather anæmic. The vaginal portion of the cervix was ascertained to be very small, flattened out, with a sharp edge on the left side of the anterior lip of the os uteri, and the greater part of it ulcerated. The ulcer involved to a limited extent the adjacent vaginal wall. The mass was not very hard. The uterus was quite normally moveable. There was profuse fœtid watery discharge, and epithelial nest-cells were found in a scraping which was taken.

The only abnormality found in the internal organs or their

functions was a floating kidney on the right side, a fact which was subsequently verified at the autopsy.

At a consultation it was decided, firstly, that, looking at the nature of the disease, operative measures were imperatively called for; secondly, that owing to the absence of any outgrowth from the diseased surface and the shortness of the "portio vaginalis" of the cervix, a successful removal by the local operation was not possible, and hence that complete extirpation of the uterus should be undertaken; and, lastly, as the vagina was too contracted for the necessary manipulations, that laparotomy should be performed, and the organ removed from above. This decision was in accord with the rule laid down by Freund.

The operation was performed by Mr. Willett on December 29, 1881, under gas and æther. It was commenced under antiseptic precautions. First, the rectum was distended by means of an india-rubber bag inflated after introduction, by which means the uterus was made to present above the pubes as soon as the peritoneum was opened. The external incision was seven inches in length, extending from within half an inch of the umbilicus to the pubes, whilst the peritoneum was opened for only four inches. Throughout the operation the intestines were easily retained in the abdomen.

One suture was at once introduced at the lower angle of the wound to keep the vesical fold of peritoneum *in situ*. Three silk ligatures were then inserted with a blunt needle through the broad ligament on each side of the uterus external to the ovary and interlaced. Very considerable delay was caused by four of them snapping when tying the segments of the broad ligaments. The broad ligament was then seized on each side close but just external to the ligatures by strong beaked clamp forceps, and all being drawn out, the uterus and ovaries were cautiously separated by scissors internal to the clamps and ligatures.

The hæmorrhage was very slight and was readily controlled by pressure forceps, only the right uterine artery causing any trouble. During separation of the uterus from the bladder, for greater precaution a large sound was maintained in the bladder by Dr. Matthews Duncan. When the separation was almost completed, part of the anterior wall of the vagina gave way where it was diseased. The posterior half of the vagina was ligatured in two portions and divided, and the uterus and appendages lifted out of the wound. Subsequently two pieces of affected vaginal wall were excised. As the vaginal wound was thus somewhat ragged and irregular, no attempt was made to draw the edges of the peritoneal wound together over the vagina, and that canal was left as open as possible, being tied in

four separate portions. After tying what bleeding points remained with carbolised catgut and sponging the cavity out, the abdominal wound was closed with Chinese silk.

The operation was completed at 4.52 P.M., having lasted just over two and a half hours. She bore it remarkably well, the pulse being 94 and temp. 98.2° when put to bed.

On examination of the parts removed, it was found that the separation had been effected through apparently healthy tissues, the parts diseased being the cervix uteri, especially its posterior lip, and part of the upper wall of the vagina, which was, as before stated, excised.

The after-treatment was the same as that employed in "Martha" after ovariotomy. The patient was kept warm in blankets, ext. opii liq. ℥xxv. given at 8 P.M., when she was sufficiently conscious and complaining of pain, and the same amount by the bowel at 9.30 P.M.

During the night after the operation she had a very fair amount of sleep, was only slightly sick, but very thirsty. The temperature rose from 98.2° to 101.8° at 2 A.M., the pulse from 98 to 138.

During the day of the 30th she dozed and slept a great deal, taking nothing but ice and iced water, of which she brought up a little at intervals. At 1 P.M. she complained of a sharp pain in the abdomen, but almost immediately fell off to sleep. In the afternoon she began to be troubled with wind, but did not pass any, and later on complained of pain across the loins. The temperature varied between 100.2° and 102°, rising twice and falling twice. Her pulse, which was 96 on the evening of the operation, was noted at 7 A.M. on the 30th to be 138, with a running indistinct beat. It improved slightly a little before mid-day, when it fell to 120 in the minute, but by 1 P.M. was again 128, and in the evening reached 140.

She passed a very easy night, took milk and soda-water, and at 10 A.M. passed some urine into the bed (half a pint?), making in all on the 31st about a pint and a half. From this time she passed her water voluntarily; it became more albuminous, and for the last twelve hours was quite red with blood. There was no carboluria, and the reaction was acid throughout. No change occurred on the 31st till 11 P.M., when she became distinctly worse. The expression became dull and sometimes anxious, restlessness came on and increased, and a sharp pricking pain was felt in the left side of the abdomen. The distension and efforts of eructation and vomiting grew more troublesome and constant. The temperature at 1 A.M. on this day was 102.6, and fell very evenly to 101.4 at 11 P.M.

January 1.—At 1 A.M. she was ordered ℥v. of tr. digitalis every four hours, and 3i. of brandy every hour. She also had ℥xx. of tr. opii with the first dose of digitalis. In spite of this, she did not sleep all night on account of the pain in her side and eructation. At 11 A.M. Mr. Willett with the finger in the vagina broke down the adhesions in the floor of the pelvis till intestine was reached. Dilute Condy's fluid was syringed up the passage, but without bringing much away; at the same time an enema of starch and ℥xx. of opium was given, which was retained, and some gas escaped down the tube. During the afternoon her breathing became laboured and quick and the face pinched; the pricking pain subsided, but her general distress and exhaustion increased. Death occurred at 11 P.M., three days and six hours after completion of the operation. The amount of urine in the last twenty-three hours was ʒviij., so that only on the 31st was anything like the natural quantity of water secreted. The temperature during the last day and night varied irregularly between 100.2° and 101.8°. The pulse reached 160 at 5 P.M., and the respirations 48 at the same time, the former being soft and small, never "wiry." About half-an-hour before death some slight convulsive twitchings occurred, but consciousness was retained to the end.

There was at first a sanious discharge from the vagina; this soon became very scanty, and was latterly offensive.

The necropsy took place on 2d January, about fourteen hours after death. This report is from the notes of Mr. Macready, surgical registrar.

The internal wound for the upper two-thirds had united well, but towards the lower end of the incision the subcutaneous tissue was beginning to suppurate, and presented small localised collections of pus. The peritoneal wound was in good apposition and closed throughout.

On opening the abdomen, general acute peritonitis without effusion was present, the intestines being glued together with recent lymph.

The pelvis contained about half a pint of dark-brown fœtid fluid.

The wound in the vagina was overlapped by a fold of peritoneum above it, and the canal was closed by it, so as to prevent the escape of fluid from the pelvis.

The ureters were found to run on each side below the level of the ligatures, and about half an inch away from them.

The bladder was uninjured, but ecchymosed where it had been separated from the uterus.

The right kidney was in the usual position with regard to

the neighbouring parts, but it was turned so that the hilum looked forwards, outwards, and upwards. It may be said also that its direction was more vertical than natural. The cellular tissue and peritoneum about it were very lax, so that the organ could easily be brought to the middle line, and also could be carried downwards, so that its lower edge reached the lower border of the fifth lumbar vertebra. The right kidney would not admit of displacement upwards to any appreciable extent. The left kidney was also more moveable than natural in the same direction as the right, but less freely so.

The liver, lungs, and heart were healthy.

CASE II.—*Extirpation of Uterus and Ovaries for Epithelioma, by the Vaginal Operation.*

Elizabeth D., aged 34, admitted into Martha Ward, January 11, 1882. Had seven children, the last at seven months, in July 1881. No miscarriage. Catamenia always regular.

The patient enjoyed good health till July 1881, when flooding came on, followed by the birth of a seven months' child. She got up on the eighth day, and did very well for a month. She then noticed a discharge from the vagina, at first blood-stained, but since then it has become thick and yellow. Up to the present she has gone about her work as usual. Has lost flesh considerably since July.

Present condition.—Anæmic, very thin. Tongue pale, clean. Nothing abnormal discovered in the chest. Bowels generally confined. No pain on micturition or defæcation. Urine 1020, acid, a trace of albumen.

Per hypogastrium.—Nothing abnormal is discovered.

Per vaginam.—In the situation of the cervix is a tuberculated mass, with a rim flattened out, about the size of a large walnut. It and the uterus are quite mobile, and the surrounding vaginal wall quite healthy. The posterior lip is the more involved, the disease extending to the upper limit of the *cul-de-sac*. The disease appears to extend for some distance up the canal of the cervix.

Between the time of her admission and the operation some blood was observed in the discharge. Her urine maintained the same character. She slept well without opiates.

At a consultation it was agreed that the disease would not be entirely removed by an amputation of the vaginal portion of the cervix uteri; that the operation of complete extirpation of the uterus and ovaries should be performed; and that as the vagina was capacious, this should be done by the vaginal operation.

Operation, Feb. 2, 2 P.M.—Under gas and æther the patient was placed in the lithotomy position, Clover's crutch being used. Mr. Willett introduced a large duck-bill speculum into the vagina, by depressing which, while the upper wall was raised by a retractor, a good view of the parts was obtained. The cervix was then seized with a pair of vulsellum forceps and drawn down. The vaginal wall was separated from the cervix by scissors and the finger-nail with little difficulty and very slight hæmorrhage, the deeper areolar tissue giving way very readily. A clamp was then applied on either side of the broad ligament nearly as far as and external to the ovaries. The peritoneum was torn through by the finger at its point of reflexion on to the fundus, first posteriorly, then with greater difficulty anteriorly, owing to the peritoneum stripping off so readily. The finger was then passed over the fundus and the uterus drawn down. A silk ligature was passed round the broad ligament on either side external to the ovaries and tied. A pair of pressure forceps being applied on the distal side, the broad ligament was divided on the proximal side of the ligatures with scissors. The uterus and its appendages were then removed, the operation having so far occupied half an hour. On removing the pressure clamps from the broad ligament, some hæmorrhage occurred from the right uterine artery. This was secured without difficulty by ligature and no other bleeding followed: the patient did not lose more than five ounces of blood throughout. It will be remembered that in the first case only the right uterine artery caused delay by bleeding, though this was slight. It seems that this artery frequently causes trouble, whether from coincidence merely or for a good reason, I am unable to say. In one case Professor Freund occupied nearly three-quarters of an hour in ligaturing the branches of the right uterine and vaginal arteries, and on this account devised an improved serrefin to control the vessels. The wound having been sponged out with a solution of chloride of zinc gr. x. to the ounce of water, a large double channelled india-rubber drainage tube was introduced and retained by a flannel bandage. The whole operation and dressing had lasted fifty minutes.

When the patient was put back to bed, one arm of the drainage tube was connected with a bucket of water above the bed containing sanitas ʒi. to the oj., while the other passed through the aperture of a lithotomy mattress. This tube remained in position till Saturday the 4th at 10.30 A.M., when it slipped while the patient was being moved. She was irrigated every two hours when awake, the water on escaping being blood-stained and never offensive. The inlet tube acted well, but the

water passed by the side of the outlet tube as well as through it, causing considerable annoyance by wetting the bed.

At 4.30 P.M. the patient was sufficiently conscious to take ten minims of the liquid extract of opium; twenty were administered at 5.30 and ten at 9 and 11 P.M. This quantity was adopted not on account of pain, but in order to ensure absolute quiet. The temperature after the operation was 97.2°, and rose steadily to 100.8° at midnight; her pulse was 90 and general condition good. Thus it seems, both from this case, and still more from the preceding, that the depression consequent on these operations is not so great as that caused by the ordinary operation for removal of ovarian tumour. I have taken the cases of the latter operation in "Martha" during the year 1880 as an example, and find, out of thirteen, only one in which the temperature was over 97° on removal from the theatre, and the average was 96.3.° The thermometer was placed in the axilla.

Feb. 3.—Slept well from 11.30 P.M. till 1 A.M.; ℥iv. urine drawn at 2 A.M.; ♏x. of opium given and a poultice applied to the abdomen on account of pain. At 4 she took a teaspoonful of brandy, which was ordered to be repeated every hour, as there was considerable collapse, and flatus became troublesome.

Throughout the day the temperature continued between 100.8° and 102.4°, the latter being at 10 P.M. She passed altogether ℥xxv. of urine by catheter in the twenty-four hours. Wind troubled her considerably, especially towards night, a little bilious vomit coming up with the eructations. She took ♏lxxx. of ext. opii liq. in the twenty-four hours, and had gr. $\frac{1}{6}$ morphia injected.

Feb. 4.—On the night of the 3d she slept very little, being troubled with vomiting. At 3.30 A.M. she brought up about half a pint. This cause of distress increased to the end, occasionally as much as a pint of bilious fluid being brought up at once. Pain in the abdomen increased through the night, and was especially severe in the right renal region. A fair quantity of urine continued to be drawn, which contained $\frac{1}{12}$th albumen and no blood, with acid reaction and sp. gr. 1028. Her condition indicating considerable and even alarming exhaustion, at 11 A.M. champagne was ordered, and a nutrient enema of essence of beef ℥iij., brandy ℥ss, and pancreatin ℈i. (in powder) given, which she retained. The pulse acquired first a small sharp and wiry character, indicating peritonitis, afterwards becoming very quick (160) and feeble in the afternoon. This character and an increase of vomiting indicated the worst prognosis, which was confirmed by the supervention of delirium and loss of control over bladder and rectum. The temperature rose to 103.4° at

mid-day, but rapidly fell to 99.6°, and remained low till two hours before death, which took place a little after midnight, two days ten hours after completion of the operation. An examination was refused by the friends.

The uterus, after removal, was found to be affected with cancerous growth through the whole cervix and part of the posterior wall of the body.

For further details of the cases, see Martha Ward Notes for 1881 and 1882. The specimens in the Museum are 3006 *a* and *b* from the first case, and 3006 *c* from the second.

Remarks by Mr. Willett.—The abdominal operation, as has been stated, was selected in the first case because the smallness of the vagina did not afford sufficient space for manipulating from below. Although probably the abdominal operation must always be a prolonged procedure, it was in this instance from many incidental causes a very long operation; and yet, of the three chief causes of difficulty or danger, viz., hæmorrhage; injury to parts in immediate relation to the uterine structures, the bladder, the ureters, and the rectum; and harmful exposure of the intestines, not one embarrassed the course of the manipulations, albeit, from the almost total suppression of urine for the first twenty-four hours, doubts arose whether one or other of the ligatures had not included an ureter. I had satisfied myself that, provided the ligatures were placed close to the outer margin of the ovaries and the subsequent dissection carried on against the uterine walls, the ureters were safe from hurt. Dr. Matthews Duncan's suggestion to distend the rectum by the inflation of an air-ball, with the object of raising up the uterus, proved of the greatest service, enabling the operator to seize the uterus at once and carry through the steps of the operation with so limited an incision of the peritoneum that the intestines neither by intention nor by accident escaped from the abdomen.

In the second case the vaginal operation was selected, both because it has had greater success, and as being simpler and easier, of which fact I had satisfied myself by rehearsing the steps of the two operations in the dead-house. Some surprise, however, was felt at the extreme ease and rapidity with which the removal of the diseased uterus and its appendages was accomplished by the vaginal operation in comparison with the prolonged labour and tediousness of the former, *i.e.*, the abdominal; and when a choice is given, operating through the vagina should certainly be adopted, although for subsequent cleansing of the pelvis it is a question whether it may not be advisable to open the abdomen and carry through a drainage tube.

Sir Spencer Wells, in narrating his case in vol. lxv. of

the "Royal Medical and Chirugical Transactions," gives the following figures:—Abdominal operation, 94 cases, only 24 recoveries; vaginal, 41 cases, 29 recoveries. The presumed advantages of the abdominal operation are that the vagina can be closed and the pelvis cleaned, and, if necessary, drained as in an ovariotomy. In my first case this plan, although I fully intended suturing and closing the vaginal outlet, was found impracticable, owing to the extension of the epithelial disease to the vaginal wall, which, when removed, left the wound too irregular and ragged to admit of perfect adaptation. I preferred, therefore, to drain from the vagina.

The operations for removal of the uterus and ovaries are in a state of rapid change and development. Those done for fibroid and Porro's operation for removal of the pregnant uterus and its contents bear little relation to the operations for cancer, and are not touched upon in this paper. The most complete discussion held hitherto on the question is to be found in the Reports of the International Medical Congress,[1] where Professor Freund, the restorer, if he may be so called, of the abdominal operation, introduced the subject. His paper and the remarks of those who followed him well repay perusal. A new modification described by Professor Corradi of Florence, in which the abdominal and vaginal manipulations are combined, is particularly interesting. The reports, being in themselves short and full of matter, will not bear further condensation. The best account in English of the method reintroduced and modified by Freund is to be found in the *Medical Times and Gazette* vol. ii., 1878, p. 93, by Sir Spencer Wells.

[1] Vol. iv. p. 323.

PERNICIOUS VOMITING OF PREGNANCY.

BY

J. MATTHEWS DUNCAN, M.D.,

AND

W. J. COLLINS, M.D.,

LATE RESIDENT MIDWIFERY ASSISTANT.

The following case of Kate T. is narrated as an example of the uncontrollable pernicious vomiting of pregnancy.[1] That was its most prominent feature, and its degree was so alarming that it would no doubt soon have proved fatal. The patient was, in the first instance, seen by Mr. Langton at her own home, and he recognised that the constant vomiting was due to her pregnancy, and not to internal or latent intestinal strangulation.[2] He therefore urged her admission into the hospital, and I was called in to see her in consequence of the great severity of the vomiting and accompanying prostration. That the vomiting and other symptoms were the result, not of strangulation, but of some disease connected with pregnancy, there can be no doubt left after perusal of the case.

This case and others of a like kind which I have seen corroborate views which are given at some length in one of my "Clinical Lectures on the Diseases of Women," entitled, "On Hepatic Disease in Gynæcology and Obstetrics." A distinction, which may be only one of degree, is established between the ordinary vomiting of pregnancy, which is rarely dangerous and probably never fatal, and that uncontrollable, always dangerous, and often fatal vomiting which occurs in connection with glandular degeneration, probably general, certainly often specially affecting the liver. It may be called the pernicious vomiting of pregnancy.

Obstetricians have long been familiar and too exclusively en-

[1] Horwitz, Zeitschrift für Geburtshülfe und Gynäkologie, ix. Band, 1 Heft, 1883. Consult also Sutugin, Hyperemesis Gravidarum, Berlin, 1883.

[2] I have only once seen a case of latent strangulation in the puerperal state. It occurred three days after delivery. No elevation of temperature, no rise of pulse, constant green vomiting, tympanitic distension, no movement of bowels even after powerful laxatives; sudden relief after three days of gravest symptoms, the relief following movement of bowels.

gaged with inflammation and degeneration of the kidney, associated with pregnancy, parturition, and childbed; and in this department we have much knowledge and an extensive literature. There can be no doubt that the puerperal diseases depending on kidney-disease and uræmia are paramount when contrasted with those connected with affections of the liver or other parts. At the same time, it appears now to be necessary to regard the renal affection, as, at least frequently, only a part of a more general affection, which may show itself in structural lesions of the liver and other parts, and consequent symptoms.

The glandular degeneration of healthy pregnancy is not confined to the kidney and liver, though in them it has been chiefly studied. The glandular degeneration and the altered condition of the blood seem to indicate the sources of peril to puerperal women which culminate in eclampsia, pernicious vomiting, various hæmorrhages, and other disasters, which in the present state of pathology we connect with uræmia or cholæmia, with renal or hepatic disease.

Many facts and considerations which I do not marshal here, and researches such as those of Frerichs and of Angus Macdonald, point to some nervous disorder, or even to localised nerve lesion, as a cause antecedent to the blood and glandular changes.

Grainger Stewart and other authors have pointed out the simultaneous occurrence of the same kind of degeneration in the liver and kidneys; and Stewart has devoted in his work on "Bright's Diseases" a supplementary chapter to this subject.

The combination of the diseases is clinically shown by such cases as Kate T.'s, for her urine contained bile and albumen. Moreover, so far as I know, this case is the first in which diabetes was observed to come on as a sequela of the renal and hepatic disease; and this circumstance is a powerful confirmation of the views which I wish to support.

There appears to be thus a connection established between the cases of acute fatty degeneration of Hecker, to which Grainger Stewart refers ("Bright's Diseases," 1st edition, p. 173), the cases of acute yellow atrophy of the liver, and a class of cases of uræmia with renal disease.

Before giving Dr. Collins' notes of Kate T.'s case, I may mention the chief clinical features of an imperfectly observed case occurring in private practice, which was seen in consultation by Sir W. Jenner.

Mrs. H., aged 22, of good constitution and sound parentage, became pregnant on marriage, last menses being in the middle of July. She had some sickness during the first two months of pregnancy and afterwards was well. Sickness, with only occasional vomiting at first, returned on February 23d, that is, after seven

months of pregnancy. The sickness and vomiting increased, and she gradually became very slightly jaundiced, a condition which persisted till her death. The stools were light-coloured but not without bile. The urine contained no albumen and was tinted with bile. On the 25th, temp. 104.2°; pulse 110. On the 26th, temp. 98.5°; pulse 84. She thought herself very well, and talked and acted as if she were so, taking food, driving out, happy. She was thirsty. On February 29th pains began at 5 A.M. and the child was easily born at 11.30 A.M., slightly jaundiced [and it survived], liquor amnii and umbilical cord bile-stained. Some flooding was checked by ergot. After labour, sickness and vomiting occurred, but now very seldom, and the patient felt quite well and comfortable. At 5 P.M., urine 1018, bile-stained, no albumen; pulse 84; temp. 98.5°. Very sleepy and thought her sleep natural. To the last declared her sleep natural and that she felt quite well, having no pain or discomfort. Pulse and temperature did not rise. Urine remained bile-tinted; no albumen. The face was at last slightly œdematous. In the course of March 1st she became more deeply soporose, but there was no other change. As evening approached the sopor deepened into coma, and the jaws became fixed. The tongue was observed to be bitten, though no regular fit of convulsions occurred. She died at 3 A.M. on March 2d.

Pernicious Uncontrollable Vomiting in a Woman Six Months Pregnant, with scanty Albuminous Urine, containing Bile —Induction of Premature Labour—Immediate Cessation of Vomiting—Transient Diabetes during Convalescence.

(*From Notes of* Dr. COLLINS, *Resident Midwifery Assistant.*)

Kate T., aged 26, admitted June 19th, 1883; married seven years; four children, last eighteen months ago. No miscarriages; catamenia last appeared six months ago. She quickened two months ago. Has suffered with morning sickness in previous pregnancies, but never to any serious degree. Has always had good health; never had scarlatina, and knows of no cause or injury to account for present illness. She was well until the morning of June 16th, when she began to be very sick; vomiting became more and more frequent, nothing was kept down; and this state of things continued until admission on June 19th. She has had no sleep for three nights owing to the incessant sickness. Bowels were open on June 18th. Urine is said to have been scanty.

On admission patient looked exhausted and ill. Sclerotics injected and slightly jaundiced, and dark haloes round eyes.

She retches frequently and brings up all she takes; the fluid vomited is faintly bile-tinted. Abdomen presents wavy cracks in the skin, and is distended by a tumour reaching to the umbilicus, the size and shape of a six months' pregnancy. Fœtal heart clearly heard. Liver dulness is normal. ℥iv. of urine drawn by catheter; sp. gr. 1020, acid, deeply stained with bile, almost to a mahogany tint; on boiling, coagulates to one-eighth of a column of urine, and microscopically a few granular and hyaline casts are observed.

Dr. Duncan, in consultation with Mr. Langton, recommended venesection to ℥ix. from the arm, which was accomplished, but without effect upon the vomiting. Various remedies, viz., ipecacuanha in minim doses, dilute hydrocyanic acid and bismuth, bromide of potassium, and morphia hypodermically, were tried without relief.

June 20.—℥xv. of urine were passed between 4 A.M. and 1 P.M. Condition of patient is much the same; has had scarcely any sleep. Pulse weak; 84 per minute. The vomiting still continuing unabated, it was decided to induce premature labour.

At 10 A.M. a solid gum elastic bougie was passed eight inches into the uterus alongside the bag of membranes, and two laminaria tents three inches long were introduced into the cervical canal and retained there with a plug.

4.45 P.M.—℥v. of urine by catheter, sp. gr. 1034, mahogany-coloured, acid, no blood, no sugar; albuminous deposit on boiling of one-eighth of a column of urine; bile-pigment reaction very distinct. Vomiting continues every few minutes; patient dozes between whiles. A hot vaginal douche administered.

6 P.M.—Bowels open freely. Regular labour pains are beginning. Still vomiting.

10 P.M.—Pains continue. Os uteri being fully dilated, plug, tents, and bougie removed. Head found presenting; membranes ruptured. Since 8 P.M. has taken less, and has not vomited quite so frequently.

12 (midnight).—Female infant born, apparently a healthy six months' child, not jaundiced; survived its birth four and a half hours. Vomiting continued during second stage of labour, but ceased immediately after birth.

June 21, 12.20 A.M.—Placenta expelled; nothing abnormal in its appearance. Ergotin gr. iij. injected into glutei. Condy and water vaginal douche. No hæmorrhage. Pulse 120 per minute.

2 A.M.—Has not been sick once since child was born. Enema of essence of beef oss., brandy ℥i., and chloral gr. xx. administered.

3 A.M.—Has been a little sick once; is now dozing. No blood-loss. Pulse 112.

9 A.M.—Has slept well. No return of sickness whatever. Not much blood-loss. Passed ℥ij. of urine. Complains of a little hypogastric pain; otherwise quite comfortable. Pulse 106. During last twenty-four hours has passed ℥xviij. of urine, sp. gr. 1024. A sample of this contains .8 per cent. of urea, or 3.43 grains to the ounce; 61.74 grains in twenty-four hours. Under the microscope no leucin or tyrosine crystals can be found.

4.30 P.M.—Taken essence, brandy and milk, and tea, with relish. No nausea or vomiting. Tongue clean. No pain. Pulse 84. Seems quite well and cheerful.

11 P.M.—Morphia gr. ¼ subcutaneously, as patient was not asleep and feeling tired.

June 22.—Slept nearly all night. Much refreshed; "feels quite herself." Pulse 80. Passed ℥xxv. of urine in last twenty-four hours; high-coloured still, and contains bile; deposit of urates; albumen disappeared. No nausea or sickness; no jaundice of sclerotics.

June 23.—Urine much paler, sp. gr. 1012, acid; still a trace of bile. ℥xxxviij. in past twenty-four hours; contains 4 grains of urea to the ounce; 152 grains of urea in the day. Breasts tender.

24th.—"Wandered" a little last night; tried to get out of bed. Extract of belladonna and glycerine has relieved distension of breasts. Passing normal quantity of urine.

25th.—Slept well. Appetite very good. Takes solid food and enjoys it. Urine ℥lij. in past twenty-four hours, sp. gr. 1011, acid; no bile or albumen, and 3 grains of urea to the ounce.

26th.—Seems quite well. Urine ℥lxx., sp. gr. 1016; contains no bile or albumen, but sugar is present; urea estimated at 6 grains to the ounce, 420 grains in the day.

27th.—Put on diabetic dietary. Urine ℥lxxviij. in the day. Sugar in urine estimated at less than 2 grains per ounce.

28th to July 1st.—Passing ℥lxxx. of urine per diem, still containing sugar.

July 2d.—Urine free from sugar. Daily quantity of urine fallen to ℥xlvi.

3d.—Patient is up and quite well. ℥lviij. of urine; no sugar.

4th.—Discharged quite well.

The following case occurred during the absence of Dr. Matthews Duncan, and is added by Dr. Collins:—

Elizabeth B., aged 38; married fourteen years; has had seven children, born at term, the last on April 12, 1882; no miscarriages. Catamenia began at 15, always regular; cannot remember date of last menses. Has never had any illness; preg-

nancies have been natural and labours easy. Had morning sickness during first pregnancy only. Never had jaundice before. Has always been temperate. Family history good and unimportant.

She dates her present illness from the time she quickened on July 8th, when she considered herself to be four and a half months pregnant. Prior to this she was in her usual good health, but afterwards began to retch and vomit, and this continued daily, usually about half an hour after a meal. The vomit was saffron coloured, sometimes darker, never like coffee grounds. About three or four days after the beginning of the vomiting she noticed her urine was dark in colour, and that the whites of her eyes were yellow. These symptoms increased in severity; her appetite left her; she lost flesh; the bowels were costive; she suffered from epistaxis, also from hæmorrhoids, which bled occasionally; she was much annoyed by itching of skin, which was sometimes accompanied by a rash.

On August 28 she became an out-patient under Dr. Hensley, for "vomiting" during pregnancy; but she did not improve. The vomiting persisted; and on Tuesday, September 11, she was prematurely confined of a living male child, which was to all appearance healthy, not jaundiced, weighed 2 lb. 6 oz., and was judged to be of about six and a half months. It survived its birth eleven days. She was attended by Mr. Stubbs, obstetric clerk. The vomiting continued up to within half-an-hour of delivery, and did not return until the fourth or fifth day after delivery, after partaking of some solid food; from this time up to October 8 she had been sick only twice.

She could assign no cause for the vomiting. She attributed the prematurity of her delivery to the vomiting.

The jaundice, which was very intense, disappeared very slowly, and the conjunctivæ were still sallow on October 8. The hepatic dulness was not unnatural. Heart sounds normal. The urine examined a few days after confinement was acid, sp. gr. 1032; a faint trace of albumen and a good deal of bile-pigment were present; no sugar; urea 1 per cent.

ON TREPHINING THE SKULL IN TRAUMATIC EPILEPSY.

BY

W. J. WALSHAM.

During the summer of 1879, a boy, 17 years old, who had been trephined by Dr. Henry Kirkwood, of Picton, Nova Scotia, for the relief of traumatic epilepsy, came under the care of Mr. Willett at St. Bartholomew's Hospital. The lad's family were leaving the colony, and were advised by Dr. Kirkwood on their arrival in England to consult one of the surgeons at St. Bartholomew's as to the propriety of repeating the operation. The fits, though much diminished in intensity, and occurring at longer intervals, still occasionally troubled him, and he was subject to violent fits of passion when in the least excited. Mr. Willett showed him at Consultations. The majority of the surgeons then present were of opinion that no further operation was expedient. He was therefore kept under observation for several months, and as his condition appeared rather to improve than otherwise, nothing more was done. Mr. Willett, however, knowing that at the time I was taking some interest in the subject of trephining, kindly handed me over the notes of the case that had been sent to him by Dr. Kirkwood (together with the pieces of bone removed at the operation), and gave me his permission to make what use I liked of them.[1]

The following is the substance of Dr. Kirkwood's notes:—

Henry H., 16 years old, was born of healthy parents, and up to four years ago was a healthy active boy. About that time he fell from a scaffolding twelve feet high, was stunned, and lay in a stupor for some time, from which he recovered apparently unhurt. It was noticed, however, that he became irritable in temper, and that this irritability gradually grew upon him until

[1] Since this paper has been in type, the patient has again been admitted into the hospital under Mr. Willett's care (see note, p. 143).

three years after the fall, when epilepsy came on, the fits increasing in severity until he was seen by Dr. Kirkwood in January 1877. A consultation was then held with Drs. Cooke and Johnston, and trephining decided upon, the guide to the operation being a scar on which pressure always caused pain.

On January 25, 1877, helped by Drs. Cooke and Johnston, Dr. Kirkwood removed a small crown of bone at the tender spot. The boy made a good recovery after the operation, and was evidently "in a manner relieved," as the epileptic fits were not so frequent.

After a second consultation another crown of bone was removed on February 14, 1877, immediately to one side of the hole left by the first operation, and from this the boy also made an excellent recovery. Nothing abnormal was discovered at either operation. The portions of bone (which I have now in my possession) appear quite healthy. Until eight weeks after the second operation he had no return of the epilepsy, and then only a slight fit, which was attributed to indigestion. Between that time and August 1877 he had only four fits, these occurring always at night, whereas, previous to the operation, they had always occurred during the day. His general health was improved, and he gained flesh, but was subject to fits of passion, the very slightest cause giving rise to great excitement. Dr. Kirkwood was of opinion that another piece of bone to the left of the trephine hole already made ought to be removed, and thought that if this were done a complete cure might be obtained. He gives, however, no reason for this opinion, or his preference for the further trephining to be done to the left of the former.

The subject of trephining for traumatic epilepsy has received considerable attention of late, and several interesting cases have been recently published.[1] The question of the propriety of trephining for the relief of epilepsy or similar conditions has also on more than one occasion been raised during the last few years at our weekly consultations at St. Bartholomew's, and within the last six months the operation has been performed by Mr. Savory. Whilst working at the subject of trephining in the preparation of a paper on the question whether the operation is dangerous *per se* for last year's Reports, I collected a large number of cases in which it had been undertaken for the relief of traumatic epilepsy. Some account of the facts and conclusions, therefore, that may be elicited from a study of these cases appeared to me might form, in conjunction with Dr. Kirkwood's

[1] Dr. West's case, "Royal Medico-Chirurgical Transactions," vol. lxiii. p. 23; Mr. Bellamy's case, "British Medical Journal," 1880, vol. ii. p. 624.

case, a communication not without interest for this year's Reports.

Statistical tables have already been published by Dr. Billings,[1] and more recently by Dr. Echeverria,[2] and it might perhaps be thought that no further field remained for work in this direction. But in those tables no details are given as to the nature of the injury, the character and duration of the symptoms, the condition found on trephining, and, when death followed, the probable cause of death. Along with the reference is merely stated that the patient was relieved or not relieved, or died. Many of the cases in those tables (Dr. Echeverria includes those of Dr. Billings) are taken from American periodicals or journals, to which, as far as I know, no access can be had in this country. Dr. Echeverria, moreover, places in his tables many cases to which, on referring to the original papers, the term traumatic epilepsy should hardly, I think, be applied. He appears to have included all the cases he has met with where convulsions have occurred. Convulsions more or less epileptiform in character are, as we all know, not an uncommon accompaniment of head injuries, as, for instance, laceration of the brain, hæmorrhage into the arachnoid, or of inflammatory and other conditions of the brain and its membranes following such injuries. These, however, should hardly be regarded as cases of traumatic epilepsy, and I have excluded such from my tables. The term, I think, should rather be applied to cases such as those of which Dr. Kirkwood's is a type—though not the only type—cases in which convulsions approach more or less to the type of true epilepsy, and though occasionally coming on immediately or soon after the injury, more often are delayed for months or years, and seem then to depend upon reflex irritation, due to the long-continued presence of a fragment or depressed portion of bone acting upon the nerves of the dura mater, or of thickening or other disease of the bone itself, of an old clot in the membranes, or even, in some cases, of a cicatrix involving the scalp and pericranium. Of such cases and the like I have collected 82 examples, and in

[1] Dr. Billings' table is reprinted in the *American Journal of Medical Sciences* for 1861. It is to this reprint that the remarks in the text apply. In his original paper in the *Cincinnati Lancet*, which periodical I have been unable to obtain, a more detailed account and analysis is, I believe, given.

[2] Dr. Echeverria's table is published in the "Archives Générales de Médecine," 1878, tome ii. It is accompanied by a very interesting paper on five cases of epilepsy which occurred in his own practice or in that of his colleagues, and which are related at considerable length. The majority of cases referred to in his table receive no other notice other than the result, viz., cure, improvement, no improvement, death. I should imagine that in some he has not looked up the original references, as two at least are really the same case reported by different surgeons.

addition to these I give reference to 48 more (taken principally from Dr. Billings' tables), which latter, as I have been unable to obtain particulars, are placed separately. Of the whole 130 cases, 75 are said to have been completely cured, 18 improved, 7 not improved or made worse, and 30 to have died. Excluding the cases wanting in detail, we have 82 remaining. Of these, 48 were completely cured, 13 were improved, or were improving at the time of publication of the cases, 4 were not improved, and 17 died.

Confining our attention exclusively to these 82 cases, we will now examine them more in detail with reference to the cause, nature, and situation of the lesion producing the epilepsy, the time of onset, duration and character of the symptoms, the local indication for trephining, and the condition of the parts discovered at the operation, the results of the operation, and, where death happened, the probable cause of death.

As such details (although I venture to think of considerable value to those who have a case of the kind under their care, and who may be seeking for facts bearing upon it) must necessarily be wearisome to the reader not especially interested in the subject, I have later on endeavoured to sum up what appear to me the broad conclusions deducible from a study of these facts, and to these I would refer him.

The Cause, Nature, and Situation of the Head Lesion to which the Epilepsy was Ascribed.

In all the 82 cases, with the exception of 10, there is a clear and distinct history of some injury to the head having been received prior to the onset of the symptoms, and there can, I think, be little doubt that, in the great majority of the cases, the injury stands to the symptoms in the relation of cause and effect. In the 10 exceptional cases (to which, inasmuch as they were not produced by an injury, the term traumatic epilepsy is not strictly applicable, but which are here included as they appear to have a strong affinity to the cases undoubtedly due to a traumatism), the cause in 3 is ascribed to syphilitic and in 2 to strumous affections of the skull, and in 3 to tumours or swellings of the head, the nature of which is not stated. In 2 no cause whatever for the epilepsy could be assigned; but a painful spot in one and a distinct depression in another made it probable that a forgotten injury had been received.

The lesion in 37 cases was the result of a blow on the head, in 17 of a fall, in 5 it was produced by firearms, and in 2 by a severe crushing of the head. The violence with which the injury was inflicted varied from a terrible blow, as by an axe or pick or

the kick of a horse, to an ordinary blow with the fist; from a fall of many feet to the mere slipping up in the street.

The nature of the lesion was in many cases difficult to accurately ascertain, as it often happened many years previous to the patient being seen by the surgeon who trephined and reported the case. In 46 of the 72 cases with a clear history of injury a fracture had occurred, and 26 of these were known to have been compound and depressed; in 18 there appears to have been depression only of fragments without a wound, and in 2 the exact nature of the fracture is not stated. In the remaining 26 cases the injury can only be conjectured; thus in 18 of these 26 there was no evidence of there having been a fracture, but in 7 of these 18 there had probably been some bruising of the bone, or separation or inflammation of the pericranium or dura mater, as thickened or diseased bone was discovered on trephining. In 8 of the 26 cases neither wound nor fracture had been known to occur; but here again in 2 there had probably been some injury of the bone or its investments, as diseased bone was also found.

The exact seat of the injury is in the large majority of the cases not accurately given. In 14 it is not specified at all. In 45 of the remainder the injury was situated over one or other of the parietal bones, in 18 cases over the right, in 16 over the left; in 11 it is not stated which. In 14 cases the frontal bone was the region affected, in 3 the occipital, in 2 the temporal, and in 4 the vertex of the skull.

Time of Onset, Duration, and Character of the Symptoms.

The periods at which the epileptic attacks followed the injury varied greatly. In 4 cases the fits came on at the time, or within a few hours of the injury; in 3 within a few days; and in 8 within a few weeks. In 13 they followed at a period varying from two to ten months, and in 20 from one to thirteen years. In 32 cases it is not stated what time had elapsed before epilepsy manifested itself; but in 5 of these it is said to have been a short time, and in one that the fits came on as soon as an abscess had healed. In one a fit occurred two years after the injury; then there was an interval of nine years, after which fits became constant. In one the patient had suffered for five years from epilepsy prior to the injury, but had become much worse since.

As to the duration of the epilepsy, in 45 cases it had lasted from periods varying from one to twenty years, viz., in 13 from one to two years; in 8 from two to five years; in 12 from five

to ten years; in 7 from ten to twenty years; whilst in 5 it is only said to have existed for some years. In 16 cases it had lasted from three to eleven months; in 4 from five to nine weeks; in 4 from six to nine days. In 13 the duration is not stated, but it may be inferred that in 4 of these it was some considerable time.

In all of the 82 cases fits having the characters more or less pronounced of ordinary epileptic attacks are said to have occurred. They varied in frequency, from one or more every other day, to two or three a month, or one every two or three months. In many of the cases they were of great severity; in some, indeed, trephining was undertaken merely as a last resource, the patients appearing to be at death's door. In 26 fits appear to have been the chief or only symptom, at least none other are specified in the report of the cases. In 29 of the remainder pain was a predominant symptom. In some instances it was persistent, in others periodic, in others only produced by pressure upon the scar or depressed spot. It was usually localised at the seat of the old injury, but was sometimes diffuse, radiating over the side of the head or neck. In some it was described as agonising in character, in others as a dull aching, the patients expressing themselves after the operation as if a heavy weight had been lifted off the head. In 11 cases pain preceded the epilepsy, and in 5 of these it is specified as having lasted thirteen, ten, five, and one year respectively before the fits came on. In 25 cases, in addition to the epilepsy, there was some mental affection, described in 8 cases as a deterioration of the mental faculties, in 5 as a loss of memory, in 7 as having proceeded to such a degree that the patients were reduced to idiocy or insanity, one boy being spoken of as in a condition of almost brutal imbecility.[1] Four patients suffered from acute mania or maniacal paroxysms, and two manifested homicidal tendency. In four of the above cases the mental deterioration manifested itself immediately or soon after the injury, and continued for some years before the first fit. One of them was stupid and cataleptic, another was morose, and exhibited homicidal and suicidal tendencies, and a third and fourth suffered from failure of intellect. In the remaining cases the mental disability was developed during the continuance of the epilepsy. In one many years elapsed, and then a homicidal tendency came on; in two the mental trouble and fits were developed coincidently with the epilepsy; and in one it is said that idiocy followed soon after the fits. In 20 cases the patients, in addition to the epilepsy, suffered from paralysis, varying from a

[1] This patient, though he died two years afterwards, regained his intellect after the operation, being able to read, walk about, &c.

mere numbness of one side or of one member, or from a partial loss of power in either the leg or arm, to complete hemiplegia. In 1 case the paralysis was limited to the muscles of the face; in 3 it was accompanied by aphasia. In 6 others there was difficulty or indistinctness in speech. In 4 the sight was affected; in 2 there was blindness of one eye; and in 1 of both.

The Local Indications calling for Trephining.

The local indications for trephining, if any existed, are not mentioned in 3 of the 82 cases. In 44 there was a depressed cicatrix or a depressed spot, painful or tender on pressure in some cases, in others sensitive, or the seat of constant pain. Pressure on such in 2 cases caused vertigo, in 1 convulsions, in another rigidity of the arms, and in another the temperature was found to be three degrees higher than over the rest of the head. In 8 there was neither a cicatrix nor depression, but a tender, painful, or sensitive spot, or a spot pressure on which caused pain, convulsions, or vertigo. In 8 there was a fistulous track leading to diseased bone; in 3 a fissure was felt in the bone; in 2 there was a bony elevation; and in 2 a tumour or swelling on the skull. In 11 the trephining was said to have been done at the site of a former wound or injury, but the exact condition of the parts is not given. In one no scar or depression or other local indication existed, but trephining was done over the lower part of the fissure of Rolando.

Of the 12 cases in which there was a depressed cicatrix, in 8 a depression or splinter of bone was found and removed; in one there was no evidence that the depression involved the inner table; in one no depression of bone whatever was found; and in one in which the depressed cicatrix assumed the form of a small pit admitting the little finger, diseased bone was discovered (having followed the disappearance of a strumous abscess), and the dura mater was adherent; in one nothing is said but that the dura mater fluctuated and serum was let out.

Of the 18 cases in which there was a depressed spot, in 12 depressed bone or splinters were found and removed; in 4 the bone was diseased, being carious, spongy, porous, &c.; in one the inner table was found normal, the depression being due to absorption of the outer table; in another no depression or disease of any kind was discovered, the dura mater alone being thickened. Of the 14 cases in which a cicatrix existed without depression, in 3 splinters of the inner table were discovered and removed; in 4 diseased bone; in 2 the bone

appeared normal, though the dura mater was detached in 1, and a fungus was found growing from it in the second; in 1 there was an exostosis pressing on the brain; and in 4 nothing whatever was found.

In the 8 cases where there was neither cicatrix nor depression but a tender or sensitive spot, in four diseased bone was discovered; in one the dura mater was separated and discoloured; in one it was adherent; in one nothing was found; and in one several ounces of serum were let out, and on post-mortem examination of this case a fissured fracture was discovered, and under it a "water-blister" pressing on the brain. In the 8 cases in which there was a fistulous track, in 5 depressed bone was discovered at the bottom of it; in 2 inflammatory products in the midst of which depressed portions of bone were found; in 1 the state of the parts was not stated. In the 11 cases where trephining was done at the site of a former wound, in 3 the bone was depressed, and in 1 diseased; in 2 serum escaped; in 1 there was a fissured fracture; in 1 what was found was not stated; in 3 nothing was found, but one of these latter cases died, and the epilepsy was accounted for by a chronic indurated condition of the brain. In the case where no scar or local indications existed, and the trephining was done over the fissure of Rolando, nothing abnormal was found. In two in which there was a bony swelling, in one nothing peculiar on the inner surface of the bone was met with; in the other the bone was very thick. In the two cases in which tumours or swellings of the head existed, the bone in the one was found very dense and thick; in the other the outer surface of the bone was rough and absorbed, the remainder of it thin and of ivory hardness, and the dura mater vascular and adherent to the pia mater. In three in which a fissure was felt in the skull, in one a lacerated hole in the dura mater was discovered, and in one a piece of bone was found embedded in the dura mater. In the third, though on dividing the scalp no fissure was found to exist, the bone was thick and the dura mater healthy. In the three cases in which the local indications are not stated the data are imperfect.

Condition of the Parts Discovered at the Operation.

In 29 cases a depressed portion of bone or fragment of the inner table was found pressing upon or projecting into the brain, and was removed at the operation; in one of these cases the irritation of the fragment had set up suppuration between the bone and dura mater. The condition of the dura mater in 14 of the 29 is not stated, but we may infer from the context that

it was healthy; in 3 it is stated to have been healthy; in 3 adherent; in 7 to have been penetrated by fragments or spicula of bone; in one it presented a hard scar, apparently the result of a former wound; and in one it showed signs of congestion consequent upon the irritation of a splinter.

In 22 the bone was found to have undergone some alteration; thus in 8 it was thickened, in 7 carious, in 2 thinned, in 1 porous, in 1 necrosed, and in 3 there was an exostosis or nodular growth of bone pressing on the brain and dura mater. The condition of the dura mater in 7 of the 22 cases is not stated. In 5 it is said to have been healthy; but in one of these it was detached, in another adherent, and in a third fluid was thought to exist between it and the brain, which latter organ felt hard and indurated. In one it was said to be detached and in one adherent, no mention being made of disease; in one inflamed and granulating; in one vascular and thick; in one vascular and adherent to the pia mater; in one inflamed and gangrenous; in one pus was found between it and the bone; and in one there was an abscess between it and the pia mater.

In 16 no morbid change was found either in the bone or dura mater at the time of the operation; but in one the dura mater was adherent, in another detached, and in a third appeared to bulge. Six of these died, and even at the post-mortem examination in two nothing was found to account for the epilepsy. In a third no post-mortem examination was allowed, in a fourth there was chronic induration of the brain, in a fifth a large splinter was discovered two inches from the last trephine hole (four crowns had been applied), and in a sixth the odontoid process was found pressing on the spinal cord.

In 3 it is not stated if anything was found at the operation, and no mention is made of the condition of the dura mater. One of these died of inflammation of the brain and its membranes, but the cause of the epilepsy was not cleared up.

In 12 the condition discovered on trephining varied very much. Thus in 5 much serum was said to have been let out; this serum coming in 2 cases from within the dura mater, which had been punctured to let it escape; in the other 3 it is not mentioned where it came from. In 3 a fissured fracture was found; in 1 a hole in the skull left after the disappearance of a strumous abscess; in 1 a fungus the size of a nut was removed from the dura mater; in 1 the dura mater was thickened, and in 1 separated and discoloured.

The Result of the Operation, and Probable Cause of Death in the Fatal Cases.

Of the whole 82 cases, 65 recovered and 17 died. The cause of death in the fatal cases will be discussed later on. Of the 65 cases that recovered from the operation, 47 (see Table I.) are said to have been completely cured of the epilepsy and other symptoms from which they were suffering; 13 were improved (see Table II.), and 4 were not improved or grew worse (see Table III.) In 19 of the 47 cases of cure no fit recurred after the operation; in 18 there were one, two, or even more, recurring generally within the first few days, or at less frequent intervals than heretofore for a month or more, but ultimately ceasing. In 11 it is not stated whether or no any fit recurred after the trephining, but merely that the cure from them was complete. Of the 13 classed as improved, one was steadily improving a year afterwards; one left the hospital in twelve days and had not been seen since, but the wound had healed and there had been no recurrence of fits; in one fits returned only when the patient's general health was depressed, in consequence of insufficient food, diarrhœa, &c., and none had occurred six months prior to the report; in another, fits were liable to recur when the patient became excited; one was cured of his mania, another of his paralysis, and another had his mental faculties restored in spite of the fits recurring, though at longer intervals than formerly. In the 4 that were not improved, of one it is simply said that there was no improvement; of one, that epilepsy was absent when the wound was kept open, but returned when it closed; of one, that there was still epilepsy, even though the wound was kept open, so that it was allowed to heal and the patient discharged unrelieved; and of one, that though there was improvement for the first ten days, the patient gradually became worse and was confined in a lunatic asylum.

Of the 17 cases that terminated fatally, in two the head was found healthy at the autopsy. The cause of death in one case is not stated. In the other it is ascribed to pleuro-pneumonia. In one the odontoid process was found pressing upon the spinal cord, and in one a "water-blister" (possibly a hydatid) was found pressing on the brain. The former patient died the second, the latter the third day after the operation, in neither case it being said that inflammation had followed the use of the trephine. Three died some months after the operation, the wound having apparently healed some time. In the first of these, the fits had ceased, and the man was discharged from the hospital at the end of two months apparently cured; but four days after-

wards he attended a fair, and the excitement, in addition to a certain amount of wine that he drank, brought on the fits again, which increased in severity, and were followed by sopor and vomiting, and by death in about a month after his discharge. The second patient regained his mental faculties and lost his paralysis for a time, but seven weeks after the operation relapsed to his former condition, was discharged from the hospital as incurable, and died the next night. There was no post-mortem examination in either this or the preceding case. In the third patient death appeared imminent before the operation. The pain and fits ceased afterwards. The trephine hole filled in. In two months the fits were re-established. In four months the hemiplegia returned, and he died of pyæmia. At the autopsy suppuration was discovered in the head, and gummata in the liver, spleen, and testis. In one a large splinter two inches from the edge of the last trephine hole was found (he had been trephined four times); the cause of death was not stated. In one an enormous clot of blood was discovered at the post-mortem examination, which was thought by Dr. Gross to be due to the giving way of diseased vessels on removal of the pressure caused by an exostosis. In one the dura mater was found at the operation to be in an inflamed and gangrenous state, and the patient died the day afterwards. In seven death was due to meningitis. In one of these, the bone at the operation was found spongy and contained pus. In one the dura mater was already absorbed, so that when the crown of bone was removed, the arachnoid cavity was exposed, and the visceral layer of the arachnoid and the pia mater were incised for the purpose of causing adhesions of the membranes, and obliteration of the cavity. In a third the dura mater was also found absorbed at the operation. In a fourth spicula were found on trephining projecting through the dura mater and both layers of the arachnoid. In the fifth it was doubtful whether the dura mater was not wounded at the operation. In the two remaining cases, it is not said what was found on trephining; both patients died the third day; one operation was done in 1819, the other in 1793.

Reviewing these cases, then, we find there were 17 deaths in 84 cases, giving a mortality of 20.2 per cent. This does not, however, give us the percentage of mortality of trephining *per se*, which in a former paper I estimated from the statistics then collected at either 10.6 per cent. or at 14.5 per cent., according as there was or was not a fistulous track leading to diseased bone previous to the operation. If, as was done in the former paper, we deduct from these 17 cases those in which death clearly followed too long after the trephining to be attri-

buted to it, and those in which inflammation of the membranes was found to have already commenced at the time of the operation, we shall find the percentage very similar to that there given. If we further deduct the cases where the dura mater was found absorbed, or was injured either accidentally or intentionally by the surgeon, and likewise the two cases where the operation was performed at a period when mortality from all operations was greater than at present, the percentage of mortality will be still considerably less.

Summary.

The above are the simple facts gathered from a somewhat minute analysis of the cases; we will now give a short summary of them, and briefly comment on some of the lessons and conclusions which a study of them would seem to convey.

First, then, as to the cause of the lesion producing the epilepsy. Although in the majority of cases the injury was the result of great violence, a point, I think, of some value elicited by our analysis is, that in many instances the reverse was the case—a fact which should lead us not to set aside without further investigation the idea of trephining from any preconceived notion that a trifling injury could not be the cause of the epilepsy, and one the more important to remember since little or no local indication (as in some of our examples) might exist. When epilepsy has followed a slight injury it appears to have been induced either by chronic inflammation and thickening of the bone, leading, it may be, to a small ingrowth or exostosis-like projection from the inner table, or merely by a thickening or inflammation of the dura mater or even the pericranium; in a few instances it appears to have been caused by the irritation of a small fragment detached from the inner table.

The primary nature of the lesion, where one for certainty was known to have occurred, was in more than one-half of the cases a fracture, generally compound, with depression of bone. In the remainder the injury, when known, was of very various nature,—a scalp wound with possible bruising of bone, a contusion of the scalp, or a simple fracture,—whilst in many no history was obtained of the primary lesion further than that the patient had had a fall or received a blow upon the head many years ago, often in childhood.

The situation of the lesion is in most cases not accurately given; in some it is not specified at all. This is to be regretted, as I had hoped that a study of a large number of cases might have helped to establish some relationship between the situation of

the lesion, and the character of the symptoms. It may be remarked that in nearly all of those in which the situation is mentioned, either the parietal or the frontal bone was injured, and only in three cases the occipital; but the same remarks, I think, will be found to apply to most cases of head injuries. Where mania, idiocy, or other form of mental deterioration occurred, the lesion may be said generally to have existed in the anterior half segment of the cranium; where paralysis was present, the parietal, with exception of two cases, was the part injured, the lesion, however, in both of these exceptional cases being so far back as to be practically in the parietal region. In four cases the paralysis affected the arm more than leg, and it is interesting to note that in the only one of these in which the exact position of the lesion is given, it was over the convolutions around the anterior and lower part of the fissure of Rolando—the situation commonly assigned to the arm centre; but in this case the paralysis occurred on the same side as the injury. In two out of three cases in which aphasia was a symptom, that part of the frontal bone that is situated over Broca's convolution was involved. In the third case of aphasia the wound was over the right side of the head; it is not stated whether the patient was left-handed.

The epilepsy, in a few of the cases, came on immediately or soon after the injury, and in the majority after a variable period had elapsed; in some even as much as thirteen years. In many cases it was preceded by other symptoms, such as pain in the wound or head, an uncomfortable feeling in the head, a growing mental deterioration, or an alteration in demeanour, temper, &c. There does not appear to be any necessary connection between the length of time that elapsed before the epilepsy came on and the severity of the fits or their amenity to treatment.

The duration of the epilepsy, after it had become established, varied from a few days to twenty years. In nearly all of the long-standing cases the fits appeared to gradually increase in severity, and the intervals between them to become less. The intellect also generally underwent some deterioration, the patients losing their memory, growing morose or subject to delusions, or even sinking into a state of utter imbecility, or becoming violently mad. These facts are suggestive of the desirability of early trephining, and the inutility of waiting in the hope that the fits will wear off in time. Although complete cure resulted in several cases of great severity and long standing, the importance of early intervention is emphasised by the additional fact that there is a greater proportion of cases of epilepsy lasting some years among those classed under the heads of

"Improvement," "No improvement," and "Death," than among those in which "Recovery" took place.

The character of the symptoms have been so fully gone into in a previous part of the paper, that we need here only mention, that though in several cases fits having more or less the characters of true epilepsy were the only symptom, there were in three-fourths of the cases some other concomitants, as pain, mental deterioration, paralysis, loss of memory, &c., and sometimes all of these present in the same case. In some the pain, mental deterioration, &c., preceded the epilepsy, but generally came on after the fits were established.

Of all symptoms, pain in the head was most frequently associated with the fits, such pain being for the most part located at or about the injured spot, and thus often serving as a good local indication for the operation. The effect on the memory in one case was most remarkable. The patient after a blow on the head lost all recollection of his previous life; he was not otherwise affected, resumed his occupation, and married. He subsequently became epileptic and maniacal, and was trephined eight years after the injury. His health was completely restored by the operation, as well as his memory of events prior to the blow. The whole of his life, however, between the injury and the operation was a total blank, and he did not even know his wife, and could hardly be convinced that he was married. This case is reported in the *American Practitioner* for June 1883.

In all the cases with but few exceptions there was some local indication for the use of the trephine. In the large majority there was a depressed cicatrix, sensitive, tender, or painful either on pressure or otherwise; whilst in others there was a sensitive, tender, or painful spot without any depression or other mark of a former injury. Pressure on such in some caused vertigo, uneasiness, or spasmodic twitching of some set of muscles, or even determined a convulsive fit. In two of the cases a distinct prominence of bone was felt without depression, and in several sinuses existed leading to diseased bone. In one a local elevation of temperature as much as three degrees higher than over the rest of the head was noticed. In this case a conical projection was found pressing inwards, but the dura mater was healthy, and the rise of temperature seemed due to a thickened or vascular pericranium. There seems to have been no depression of any kind to be felt externally, but merely a spot on touching which the patient became giddy. This increase of temperature, therefore, would appear to be a sign of some importance, and is one which I think it would be well to look for when examining

a similar case for any local indication of disease. Another sign of some value, which does not seem to have attracted the notice which it deserves, is the presence or absence of a friction sound, such as has been heard by Sedillot and others in fractures of the inner table with separation of small fragments or spicula, and is explained by the pulsation of the brain causing a rubbing between the fragment and dura mater. As in many of the cases a single spiculum or exostosis was found, it is possible that a friction sound in some of them might have existed.

In two-thirds of the cases a portion of bone was found either depressed or variously altered or diseased. The depressed bone, as has been already said, had the form in many of the cases of a spiculum pressing upon or projecting into the brain. Such was also the case in several instances in which diseased bone was found; but in others the bone was merely discovered to be thickened, spongy, carious or necrosed. Under the two latter circumstances there was generally a fistulous track leading down to it. The dura mater in the greater number of cases appeared healthy; but in some was thickened, congested, vascular, adherent, or otherwise altered. In sixteen nothing was found at the operation to account for the epilepsy. Six of these died, and in two, even at the post-mortem examination, no cause for the epilepsy could be discovered. The remaining ten completely recovered from the operation, and also with the exception of three were cured of the epilepsy and other symptoms for which they were trephined. In the three exceptions, two were improved and one was not improved. It is somewhat difficult in these cases in which nothing was found to say what was the cause of the epilepsy, or in what way the trephining did good. In two of them which were recent it is possible that epilepsy depended on some primary lesion of the brain, and that they might have got well even if trephining had not been resorted to. But in others it seems undeniably clear that benefit did accrue from trephining. The symptoms had lasted many years and ceased after the operation. In those that were not improved or died unrelieved, it is possible that an undetected fragment of bone, &c., might have been the cause of the epilepsy, as, for example, in Case 66, where, although at the operation nothing was found, at the post-mortem examination a spiculum was discovered not far from the trephine hole. This is a point which has an important bearing upon practice. Supposing in operating nothing is found, should another crown be applied or not? The lesson taught would seem to be, that as several such cases have got well, we should wait a time in the reasonable expectation that some improvement may follow; but if such does not

occur we should trephine again, in the hope that a spiculum, &c., near or in the region of the injury may be found.

The results of the operation, I think, may be considered eminently satisfactory. Out of 82 cases 48 were completely cured and 13 relieved. It is possible that some of these 13 ought also to be classed under cures. Several of them were said to be steadily improving at the time of the report, and it is to be regretted that the records have not been completed by later accounts. The value of such is well instanced by a case of Mr. Syme. In the first notice of it in the *Edinburgh Medical Journal* it is commented on by the author as an example of the inutility of the operation, and I had put it under the head of "Not Improved." On looking through the *Lancet*, I happened to come upon a further account of the case, communicated to this periodical at a much later date, in which it is stated that after the patient went home he steadily improved, and at the time of the last publication had had no fits for some years. On the other hand, we must not lose sight of the fact that some of the cases classed as complete cures were reported within a short time of the operation; and it is possible that, as in the cases of Wattmann (No. 62) and Bryant (No. 75), (which have been put under "No Improvement" and "Death" respectively), a relapse, as in these, might have taken place.

It would appear to be not uncommon for fits to recur after the operation, but at less frequent intervals, and then finally to cease. It has been suggested that in such cases the epilepsy having lasted many years, it takes some time for the brain to recover itself, and to lose, as it were, the epileptic habit, although the cause itself is removed. This theory, however, is not completely borne out by our analysis, as in many where symptoms were of long duration, and in which such a habit should be well marked, no fits recurred afterwards; whilst in others, where the epilepsy had only existed a short time, there were several fits during convalescence.

The probable causes of death have been discussed at length. It need merely be remarked here, that the analysis of the cases confirms the view taken in my previous paper, that the operation of trephining need not be feared as a dangerous one *per se*.

A few words in conclusion. When there is a clear history of an injury, a well-marked cicatrix or sinus leading to dead bone, and the epilepsy has as clearly followed the injury, there can, I think, be no doubt of the propriety of trephining, and there are few surgeons, I should imagine, who, under such circumstances, would hesitate to do so. But with the fact before us, that in many cases where the history of an injury has been obscure, or

no history whatever obtained, or where the only local indications have been a sensitive, painful, or even a mere tender spot without any evidence of depression or inequality of bone, patients have been rescued from a miserable existence and restored to one of health and comfort. I think we may go further, and say that even with such slight indications the trephine ought to be used; and holding as I do that the operation is one in itself not attended, when the membranes are not wounded, with much danger, I would give the patient the benefit of the doubt, and would myself press the operation.

APPENDIX.

Henry H. was again admitted into the Hospital on November 23d of the present year, and I have again to thank Mr. Willett for kindly allowing me to add this further note. After remaining under Mr. Willett's care in 1879 for four months, during which time he took large doses of bromide of potassium, he went to sea as a sailor, and had no further fit till sixteen months ago, when the epilepsy, without any evident cause, returned. The fits are said to have occurred at first about every three weeks, but latterly about every ten days. He has had one lasting for upwards of ten minutes since his admission into the hospital. He has no paralysis or loss of memory, and appears intelligent and otherwise in good bodily health. Pressure on one portion of the scar causes him to feel a peculiar "darting sensation" through his body. He states that he has again seen Dr. Kirkwood, who strongly advises the reapplication of the trephine. Mr. Willett showed him at Consultations (Thursday, 29th November), and suggested that the symptoms were probably due to a nerve having become involved in the cicatrix, and proposed cutting down and freeing any nerve which might be thus found, or removing any loose fragment of bone that might be discovered, but he did not think that a further trephining was called for, and in this opinion the other surgeons then present concurred.

December 1, 1883.

TABLE I.

Forty-Seven Cases in which Complete Recovery followed Trephining.

A.—*No Fits after Operation.—Nineteen Cases.*

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition found on Trephining.	Result.
1	Med. Chir. Trans. 1880, p. 23. (West.)	F.	14	Blow with stone.	Compound depd. fracture. Right side frontal close to median line, two inches above eyebrow.	7 yrs.	Epileptic fits, increasing; almost idotic. Involuntary passage of urine and fæces.	Over depressed firm white cicatrix.	1 year.	Trephined two crowns eight years after injury. No evidence that fracture had involved inner table.	Hemiplegia for some days, but passed off. Complete recovery in one month. Antiseptic.
2	Cooper's Lectures on Surgery, p. 310. (Hemstead.)	M.	31	Blow with brickbat.	Compound depd. fracture. Upper frontal.	6 mths.	Epileptic fits occurring once a fortnight; then more often.	Where wound healed. Bone felt depressed.	6 mths.	Trephined a year after injury. Depressed bone removed.	Had no more fits. Rapid recovery.
3	Surgical History, War of Rebellion, p. 59. (Briggs.)	M.	25	Blow with stone.	Compound depd. fracture. Anterior part parietal bone.	A few weeks.	Epileptic fits every four or five days.	At site of wound.	5 wks.	Trephined angle of inner table projected into brain.	No return of epilepsy.
4	Amer. Med. Times, Jan. 19, 1861, p. 45. (Markœ. Operation done by Wood.)	F.	16	Fall in street.	Fracture left parietal. Skin not broken. Insensible two hours.	A few hours.	Epileptic fits came on in a few hours, with partial paralysis of left arm and mental deterioration. Fits increasing.	Over old fracture.	2 yrs.	Trephined two years after injury. Spicula of bone removed.	Fits ceased three years afterwards. No fits since operation, but muscles of arm are rigid and joints stiffened.

5	Amer. Practitioner, June 1883, p. 343. (M'Cormac.)	M.	23	Blow with hammer (stunned).	Compound depd. fract. junction of sagittal and coronal sutures.	7½ yrs.	Epilepsy. Pain and great tenderness in wound. Maniacal.	Over sensitive depression size of silver quarter.	6 mths.	Trephined eight years after injury. Depressed bone removed. Dura mater healthy.	No recollection from time of injury till time of operation of what had occurred before injury. After operation could not remember what had occurred between the injury and operation.
6	Amer. Practitioner, June 1883, p. 341. (Roberts.)	M.	30	Shot.	Compound depd. fracture, anterior and upper fourth left parietal. Inflammation of brain. In four months wound healed, but during the two following years reopened on several occasions, and bone came away.	3 yrs.	Peevish. Headache. Epileptic fits, rare at first, then every week; at last several occasionally a day.	Over depd. cicatrix. Fibrous membrane over old wound.	...	Trephined. Several fragments and pieces of lead embedded in dura mater.	Several months afterwards no epilepsy or headache.
7	Archives Générales, tome ii. 1878, p. 543. (Echeverria.) 1st case.	F.	15	Blow window shutter.	Depd. fract. right parietal eminence. No wound.	Same day.	Epileptic convulsions, improved. Headaches came on shortly after, then daily attacks of giddiness, which were premonitory of convulsive fits by night. Rapid deterioration of intellect. Did not answer when spoken to. Pain left side face.	Over depd. spot, pressure over which caused vertigo.	6 mths.	Trephined six months after injury (two crowns) and sawing away of intermediate portions. Depressed bone removed. Periosteum red and thick, firmly adherent to bone. Internal table rough. Convulsive movement of right arm each time attachments of dura mater were loosened.	Immediate improvement. Ten days cicatrisation; no fit after operation. Intellect restored. Remained well till six and a half years afterwards, when died of typhoid - pneumonia.

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
8	Transylvanian Jour. of Med., vol. i.; also Amer. Jour. Med. Scien., 1828, p. 489. (Dudley.) 2d case.	M.	21	Blow.	Compound depd. fracture, inferior middle part left parietal. Paralysis came on suddenly 9th day, but in two months passed off; from that time increasing pain in head and excitability.	9 yrs.	Epileptic fits came on nine years after accident; fits every two to four weeks. Memory and intellect failed. Speech stammering.	Over old cicatrix and slight depression.	7 yrs.	Trephined sixteen years after injury. Depressed bone removed. Fragment had penetrated dura matter.	Severe convulsions during operation; great loss of blood. Serum flowed for three days. Memory, intellect, and speech improved in few days. No more fits after operation. Cure in six weeks.
9	New Orleans Jour. of Med., 1868. (Richardson.)	...	...	Fall.	Wound. No fracture.	2 or 3 mths.	Epileptic fits occurring regularly.	Over old wound.	...	Trephined; much serum escaped.	Intelligence improved. Recovery.
10	Brit. Med. Jour., vol. ii. 1869, p. 327. ∴ (Bell, A.)	F.	24	Fall.	Depd. fract. right parietal eminence.	...	Constant pain; epileptiform convulsions; giddiness; could not remember names, nor count five; œdema right side face.	Over depression at right parietal eminence, which was the size of half-a-crown, and painful on pressure.	17 yrs.	Trephined. Dura mater congested and bulging, but did not pulsate. It was punctured and clear serum let out.	Lost all fits and pain. Strong and memory tolerably good when case reported one year afterwards.
11	Obs. Medic. Chirurg., Boyer; "Traités des Maladies Chirurgicales," p. 143. (Marchettis.)	M.	...	Not stated.	Compound depd. fract. skull.	...	Epilepsy came on after apparent recovery.	Over fract. which was found on passing sound.	...	Trephined. Next day yellow ichor escaped.	Epilepsy ceased.

12	Schmucker's Vermischten Schriften, v. i., 1776, p. 252. (Wurm.)	M.	22	Fall.	Wound from upper edge left orbit to coronal suture.	Some weeks.	Short fits of unconsciousness once or twice a day. Then after eight days fits longer and more often. Pain in head. Hemiplegia, left side, came on when cicatrix incised.	Over firm cicatrix, inner and upper edge left orbit.	A few weeks.	Trephined when hemiplegia came on. Some teaspoonfuls of blood flowed. Dura mater sound, but detached from the cranium a few lines.	In forty-eight hours paralysis disappeared. No fits after operation.
13	Amer. Jour. Med. Scien., v. iv., 1829. (Guild.)	M.	40	No known blow nor injury.	Pain left side frontal bone, $\frac{1}{8}$th inch from coronal suture.	...	Epileptic fits suddenly came on; at first every few weeks, then more frequent. Pain left side head; blind left eye. Failure general health.	Over spot where pain most acute.	15 mths.	Trephined. Bone thickened, somewhat spongy and carious. Dura mater healthy; much serum discharged; not stated where from, probably diploë.	Pain in head disappeared. Wound healed in thirty days. No recurrence of fits.
14	Hausver'sche Annalen, 1837, v. ii. p. 8. (Holscher.)	F.	19	Fall down stairs.	Wound, no fracture.	4 weeks.	Epileptic fits, increasing in violence and frequency.	Over wound.	3 mths.	Trephined some months after injury. Fungus, size of nut, removed from dura mater.	Wound healed in three days. No return of fits. Well fifteen years afterwards.
15	Edin. Med. and Surg. Jour., 1806, v. ii. p. 428. (Coates.)	M.	33	Struck head against beam whilst driving.	Wound over vertex of skull. A year afterwards, tumour formed on spot, which healed in six months.	2 yrs.	Epileptic fits at intervals of a week or month. Pain in head; blind left eye; numb left side.	Puffy ulceration centre of coronal suture, where there was a fistulous track to dura mater.	2 yrs.	Trephined four years after injury. Diseased bone, honeycombed on inner surface. Dura mater detached, but healthy.	Union by first intention. Well one and a half year after operation. Vision not quite restored.

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
16	Lancet, 1873, Aug. 30th. (Cooper Forster & Wilks.)	M.	39	Blow.	Slight swelling top of head.	4 mths.	Queer in head ever since injury. Pain. Epileptic fits came on nine days before operation, at least four or five every hour. Spasms left side body at frequent intervals. Weakness and numbness arm and leg. Sight left eye weak. Lost hemiplegia left side seven days before operation.	Over swelling, free incision having been previously made to the bone and pus let out.	9 days.	Trephined four months after injury. Bone rough and excavated on outer surface. Very dense, and of increased thickness. Pus in wound. No other abnormal appearance.	No fits afterwards, but some twitchings.
17	Amer. Jour. Med. Scien. 1838, p. 517. (Hayward.)	M.	41	Strumous abscess, followed by caries of both tables.	Two inches to left of sagittal suture, and immediately behind coronal.	...	Epileptic fits every night or two came on when abscess healed. Lost consciousness for a few minutes at commencement of fit. Persistent heavy feeling in head. Fits now one in a few months.	Over pit-like cicatrix admitting little finger at anterior superior left parietal. Tenderness on pressure.	Many years.	Trephined thirteen years after abscess formed. Bone easily detached from dura mater, except at centre, where adherent; dura mater healthy.	Immediate relief. Rapid recovery. No more fits. Still well two months afterwards.
18	Guthrie's Injuries of the Head, 1842, p. 80. (Blake.)	M.	...	Blow with fist.	Over right parietal. No wound.	1 mth.	Severe epileptiform convulsions threatening death.	Over part struck.	A few days.	Trephined. Nothing found.	Paroxysms ceased in a few hours. Complete recovery.

19	Med. Times and Gaz., vol. ii. 1868, Sept. 26. (Poland.)	M.	14	Heavy wooden trestle fell seven feet (stunned).	Swelling, but no wound, close to median line, two inches in front of superior angle occiput.	...	7th day twitchings. 11th spasmodic epileptiform convulsions. 14th unconscious with each muscular twitching. Persistent headache supervened, referred to vertex.	Over part struck.	...	Trephined nine weeks after injury. No local disease discovered.	No more convulsions after operation. Perfect recovery.

B.—*One or more Fits after Operation, Finally Ceasing.—Eighteen Cases.*

20	Amer. Jour. Med. Scien., vol. xxxix. p. 281, 1860. (Brainard.) 2d case.	M.	Yg.	Blow with axe.	Compound depd. fract. left parietal, from junction of coronal and sagittal sutures for three inches to left. Bone removed. Also wound over occiput at junction with parietal.	...	Epileptic fits sometimes daily. Paralysis and contraction right side.	Over depd. bone at seat of anterior wound.	Some time.	Trephined three crowns. Posterior wound not operated on. Depd. bone removed.	Only one fit after operation. Recovered movement of members.
21	Amer. Jour. Med. Scien., vol. xxxix. 1860. (Brainard.) 3d case.	M.	Yg.	Blow.	Depd. fract. above ear. No wound.	6 mths.	Epileptic fits at intervals of three months, then every month.	Over depressed spot.	6 mths.	Trephined one year after injury. Depd. bone removed.	Fits less frequent for six months, then no more.
22	Brit. Med. Jour., 1862, Feb. 8, p. 144; also in Amer. Med. Times, Jan. 11, 1862, p. 31. (Read.)	M.	28	Blow.	Dept. fract. anterior inferior parietal angle.	Not stated.	Epileptic fits at intervals, usually of a day or two, rarely of three weeks. Cramps and numbness of upper extremities. Mental deterioration.	Over depressed spot.	...	Trephined at end of a year and nine months. Splinters removed, which had pressed upon membranes and brain.	Slight spasms the first two weeks, but no real fits. Walked in two weeks. Complete recovery.

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
23	Gaz. Méd. de Paris, 1857, p. 567. (Lalliyeux.)	M.	23	Shot.	Piece of outer table of upper left frontal torn away.	6 mths.	Giddiness six months afterwards suddenly came on, then syncope; the next day epileptiform convulsions, followed by sopor, difficulty of speech, and in the night five fits. Total aphasia. Impairment of sensation and motion. Involuntary passage of urine.	Over fistulous track leading to abscess in left zygoma.	6 days.	Trephined six months after injury. Splinters of inner table removed which had pressed on anterior lobule of brain and dura mater. No sign of suppuration beneath dura mater.	Gradual disappearance of symptoms. No more fits after the first day.
24	Amer. Jour. of Med. Scien., Jan. 1860. (Yeates.)	M.	20	Blow from pick.	Depd. fract. right parietal.	...	Epilepsy followed the blow and continued ten years. Comatose.	Over depressed spot.	10 yrs.	Trephined ten years after injury. Pieces of bone with spur-like fragment which had pressed on brain removed.	Cure complete. Convulsions on second day after operation, but none since. Report made four weeks afterwards.
25	Transylva. Jour. of Med., vol. i.; Amer Jour. of Med. Science, 1828, p. 489. (Dudley).	M.	23	Kick of horse.	Compound depd. fract. right parietal bone.	10 yrs.	Epileptic fits every three or four weeks. Loss of memory.	At depressed spot over seat of fracture.	8 yrs.	Trephined eighteen years after injury. Depd. bone removed, a fragment of inner table projected in a sinus about	Two fits after operation, one on second and one on third day, but slighter.

										the size of a hen's egg, caused by deficiency of dura mater, and reached to petrous bone.	
26	Brit. Med. Jour., 1876, vol. ii. p. 586. (Williams.)	M.	18	Fall on iron plating.	Compound depd. fract. ant. inferior angle left parietal.	4 mths.	Pain seat of injury; weakness left side. Epileptic fits weekly, more in left arm and leg than in right. Aura as numbness beginning in middle finger left hand up to elbow, then to left side of face. Ptosis left eye. Arm more paralysed than leg. Wasting left arm.	Over painful scar.	4 mths.	Trephined eight months after injury. Fissured fracture involving both inner and outer tables discovered. A sharp spiculum of inner table adherent to dura mater removed.	Paralysis quickly disappeared. 4 fits while wound was healing. Another on taking beer six weeks afterwards. Returned to trade of boilermaker. No more fits when report made, two years afterwards.
27	North Amer. Med. and Surg. Jour., 1826; Froriep Notizen, Bd. 17, No. 14, p. 221. (Rogers.)	M.	46	Not stated.	Compound depd. fract. frontal.	Short time.	Epilepsy. Idiocy came on soon after fits. Pain in spot wounded spreading to neck and left arm. Left eye smaller than right. Memory nearly gone.	Over scar of trifling depth at left ciliary arch.	14 yrs.	Trephined fourteen years after injury. Depd. bone removed. Dura mater wounded at operation. Piece of inner table removed which had pressed on brain. Brain more injected than usual.	Pain in head and slight constitutional disturbance after operation. One fit, and then a bad one, twenty-five days after operation, brought on by immoderation in diet. Memory restored. Nine months afterwards had had no more fits.

No.	Reference.	Age.	Sex.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
28	Lond. Med. Gaz., 1835, vol. xvii.; also in Schmidt's Jahrbücher, Bd. 12. (Palmer.)	F.	35	Syphilis.	... ...	...	Frequent epileptic fits. Violent periodic pain in head. Incision. Relief. Sudden hemiplegia. Fits becoming more frequent.	Over sensitive spot right parietal. Incision to bone. Fits ceased for six weeks, but returned when wound healed.	9 mths.	Trephined. Bone twice as thick as natural. Dura mater adherent.	Two more fits, one two hours after operation, one next morning, then ceased.
29	Journal der praktischen Heilkunde, 1811, Bd. 32, Stück 6, p. 46. (Hufeland.)	M.	15	Blow with tailor's measure.	Superior part of parietal bone.	2 yrs.	Became stupid and cataleptic at once. In two years epilepsy came on; twenty to twenty-five fits daily.	Over tender spot on superior part of parietal bone at superior longitudinal sinus.	3 yrs.	Trephined five years after injury. Longitudinal sinus wounded in operation. Dura mater separated for two inches, and discoloured.	Fits repeated after operation, but soon diminished, and finally ceased.
30	Med. Chir. Soc., 1860; Med. Times and Gaz., Aug. 25, 1860. (Lee.)	...	...	Syphilis.	Right temporal.	...	Convulsions without loss of consciousness. Flushing of face. Ulceration right arm, twitchings of muscles of face, and rigidity of muscles of mastication.	Over spot at right temporal where there was extensive disease of bone.	8 or 9 yrs. ?	Trephined. Internal table roughened.	Fits recurred a few hours after operation, but ultimately ceased. Ulceration healed.
31	Arch. Gén. de Méd.,	M.	21	Fall when six years old	Wound left occipital, ¾ inch over	...	Pain in head since fall. Ten years	Over spot on touching which	2 yrs.	Trephined fifteen years after in-	Twelfth day after operation fits

	sér. vii. t. ii. 1878, p. 529. (Echeverria.)			from swing	superior curved line, more than an inch to the left of occipital ridge.		spasms of arm, with involuntary movement upwards. Thirteen years epilepsy; cry before fits; converging strabismus of right eye. Tongue deviating to left. Speech not affected. Fits now every two or three days, with spasms of arm incomplete.	patient turned giddy. Temperature of wound three degrees higher than head.		jury. Periosteum thick and vascular. Conical projection near to the superior longitudinal sinus pressing brain, and dura mater removed. Dura mater normal, and not touched, except where attached to exostosis.	came on again. Cicatrix opened, and sanguineo-purulent fluid let out. Four weeks afterwards another abscess formed under cicatrix. Fits disappeared.
32	Archives Générales de Médecine, 1878, p. 539. (Morgan.)	M.	38	Fall on head.	On angle of left superior posterior parietal bone. No wound; no fracture.	At once.	Mania and epileptic vertigo came on suddenly. Furious mania lasting days came on more recently.	Over tender spot where pressure caused giddiness.	Some time.	Trephined two crowns. Bone hard and very thick (osteitis?).	Fits only occasional, and ceased three months after injury. Then became intemperate and died from perienchephalitis. P. M. — Bone around trephine hole natural. Intense congestion of the tumefied and indurated brain tissue below perforation. Superficial sclerosis of the cortical layer of the hemisphere.

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition Found on Trephining.	Results.
33	Edin. Med. and Surg. Jour., No. 115; also Lancet, 1855, vol. i. p. 117 (Syme.)	M.	22	Blow when blasting rock (stunned).	Compound depd. fracture of malar bone.	...	Occasional epileptic fits. Much pain in head.	Cicatrix at side of face previously cut into. Trephined over the sinus, which remained open six or seven years, leading to dead bone.	4 mths.	Trephined; probe passed two inches into brain, which seemed hollowed out into an abscess.	Much relief from pain. Fits recurred but seldom. Report says returned home and continued in same state, though, on the whole, improved. Mr. Syme some years afterwards reports in Lancet perfect health, cure from pain and fits.
34	Amer. Jour. of Med. Scien., vol. ii. 1828, p. 489. (Dudley.) 1st case.	M.	Adt	No known cause.	Tumours on superior posterior part of skull.	1 yr.	Severe pain for a year. Epileptic fits every five or six days. Severe pain in head.	Over depd. and sensitive spot which remained after disappearance of tumours.	3 mths.	Trephined fifteen months after injury. Two crowns. Pericranium thickened. Bone porous. Dura mater healthy. Fluid observed between dura mater and brain. Brain felt hard.	Fluid absorbed. Brain rose and pulsated naturally. Had two slight attacks of epilepsy during three months of convalescence. Report says radical cure; no more fits after many months, nor pain.
35	Brit. Med. Jour., No. 53, 1858, p. 405.	M.	30	Thrown against iron bolt by jib of	Compound depd. fract. right parietal, near coronal	7 mths.	Well for seven months, then epileptic fits oc-	Over depression the size of sixpence, where	1 yr. 4 mos.	Trephined end of one year and eleven months.	Severe fit lasting ten minutes second day after

	(Lloyd Chippendale, House Surgeon).			sail. Insensible for twenty-four hours.	suture, and two inches from middle line. Pieces of bone removed on several occasions.		curred about once a month, then at intervals of from fourteen to twenty days. Became more frequent after wound healed. Pain in head; no loss of memory.	brain-pulsation felt (wound healed).		Inner table loosened, probably by ulceration. Sound passed one and a half inch between bone and dura mater. Jagged bone, which was pressing on brain, cut away from edges of hole.	operation, and several more during the next day and night. From this date no more fits for six weeks: wound then not quite healed. Returned to work at end of two months.
36	Abercrombie's Diseases of Brain, p. 193; Dublin Hosp. Reports, i. 343. (Crampton.)	F.	32	Probably syphilis, but ascribed to a blow six months previous.	Swelling middle of left parietal bone.	...	Epileptiform fits. Severe pain. Paralysis of arm. Weakness lower limbs. Vomiting, emaciation, and pallor. Indistinct speech.	Over fistulous opening leading to dead bone. The swelling had been previously incised and found to consist principally of thickened pericranium.	...	Trephd. Bone superficially rough and carious; dura mater vascular and thickened.	For six days after operation fever, erysipelas, delirium. Dura mater sloughed; convulsions; then cure in a fortnight, and return to work in six weeks.
37	Annales Médico-pschychologiques, série ii., tome i. 1849, p. 613. (Campbell.)	...	...	Tooth of a fork.	Penetrated left side of coronal, three inches in front of zygomatic apophysis.	6 mths.	Immediate hemiplegia right side. Aphasia, improved. Epileptic fits came on six months after accident every eight or ten weeks, then every three months.	Over seat of wound.	...	Trephined. Fissured fracture discovered.	At first fits much less frequent, then ceased. For four years has had no return.

C.—*Not Stated whether or not Fits after Operation.—Eleven Cases.*

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
38	Boston Med. and Surg. Jour., 1841, vol. xxvii.; also Zeitsch. für die gesammte Medicin, Hamb., 1842, Bd. xx. p. 234, (Cadwell.)	...	...	Kick of horse.	Compound depd. fract. of parietal bone.	6 yrs.	Epilepsy.	Over depressed cicatrix.	7 yrs.	Trephined thirteen years after injury. Dura mater fluctuated. Punctured. Much serum escaped.	Recovery in two months.
39	Amer. Jour. of Med. Science, 1860, vol. xxxix. p. 281. (Brainard.) 4th case.	M.	Yg.	Kick of horse (concussion).	Compound depd. fract. above ear.	At once.	Epilepsy. Insane.	Depressed spot.	...	Trephined at end of four weeks. Depressed bone removed.	Immediate relief.
40	Jour. of Mental Science, 1874, vol. xix. p. 552. (Clarke Wilson.)	M.	26	Mass of coal fell on head.	Compound depd. fract. left frontal, three inches above left eyelid. Insensible four days.	4 yrs.	Alteration in disposition soon after injury. Gradual homicidal tendency, then epileptic fits.	Over depressed cicatrix.	2 mths.	Trephined four years and two months after injury. Depressed bone removed.	Complete recovery. Discharged sane.

41	Gazette Médicale de Paris, 1848, p. 377; Lancet, 1847, vol. ii. p. 175. (Robertson.)	M.	23	Fall on head.	Depd. fract. posterior superior angle parietal.	...	Acute mania. Recovered intellect at end of six weeks, but remained violent and unmanageable. Great pain in spot struck.	Over depressed spot.	10 yrs.	Trephined eleven years after injury. Depressed bone removed. Bone healthy, but dura mater adherent.	Entire recovery from all bad symptoms.
42	Guthrie's Injuries of Head, p. 88. (Guthrie.)	M.	...	Sabre-cut.	Compound depd. fract. of skull.	...	Epileptic fits.	Over wound, not yet healed.	...	Trephined some months after injury. Depressed bone removed. One piece inner table was detached, and had irritated dura mater.	Recovery.
43	Amer. Practitioner, June 1883, p. 343. (Yandell.)	M.	Not stated.	Shot.	Depressed fracture.	3 yrs.	Epileptic fits.	Depressed spot.	2 yrs.	Trephined five years after injury. Sharp-pointed exostosis size of pea.	Complete and perfect recovery.
44	Amer. Jour. of Med. Science, v. xi. p. 542; Archives Générales, 2d série, tome iii. p. 286. (Dudley.)	M.	Adt.	Gunshot.	Compound depd. fract. centre of posterior part right parietal bone. Portions of bone removed. Dura mater wounded. Brain matter escaped.	2 mths.	Pus exuded through wound for two months, then epileptic fits came on, with great derangement of general health.	Over cicatrix two and a half inches in length, in which two small holes in bone discovered leading to diseased bone, from which pus escaped.	...	Trephined. Splinters of diseased bone removed from cavity in brain under dura mater, which had been caused by absorption.	Rapid and complete recovery.
45	Pirogoff's Grundzüge, p. 181. (Pirogoff.)	M.	...	Blow with sharp weapon.	Wound left parietal.	...	Epileptiform fits when spot was touched.	Over spot painful on pressure.	Some time.	Trephined. Nothing found.	Wound healed after suppuration and casting off of necrosed bone. Cure of pain and epilepsy.

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
46	Amer. Med. Times, 1861, January. (Sayre.)	M.	30	Fall from horse twenty years ago, and again three months later on same place.	Swelling back of head, which disappeared; second fall caused wound of scalp, which healed, and was followed by a tumour, which also disappeared.	...	One epileptic fit two years after, referred to impropriety of diet. No more for nine years, when became dizzy and insensible. Since that time has had fits at variable intervals, sometimes every day. For a little while lately has had pain in head. Insensible during fits.	Over small hard elevation just below occipital protuberance, and a small depression a little to left of it, which, whenever touched, caused convulsions of muscles of face and pain in head.	9 yrs.	Trephined twenty years after injury over lateral sinus. Nothing peculiar was discernible upon inner surface of bone.	Stated by Dr. Sayre long afterwards that complete recovery took place.
47	Amer. Practitioner, June 1883, p. 343. (Yandell.)	M.	Yth.	Kick of horse.	Slightly depressed fracture centre of frontal.	2 yrs.	Fits rare at first, afterwards more frequent.	Over depressed spot.	4 yrs.	Trephined six years after injury. Nothing found except thickened dura mater.	Complete recovery.
48	Chicago Med. Jour., 1859; Amer. Jour. of Med. Science, 1860, vol. xxxix. p. 281. (Brainard.) 1st case.	M.	30	Not known.	Tumour on left occipital bone below protuberance, had existed many years.	...	Epilepsy. Insanity.	Over absorption of bone and roughening of outer surface.	4 mths.	Trephined skull thin, but of ivory hardness. Dura mater vascular, and adherent to pia mater.	In three weeks returned home much improved in health and very quiet.

TABLE II.

Thirteen Cases in which Improvement followed Trephining.

49	Amer. Jour. of Med. Science, 1860, vol. xxxix. p. 281. (Brainard.) 5th case.	M.	50	Not stated.	Depressed fracture, temporal region.	Several years.	Giddy. Occasional loss of consciousness, then epilepsy and dementia.	Depressed spot.	...	Trephined at end of eleven years. Depressed bone removed.	One year afterwards steadily improving.
50	Gazette des Hôpitaux, April 1846, p. 169. (Bérard.)	M.	...	Not stated.	Depressed fracture of skull.	...	Epilepsy. Loss of consciousness during attacks.	... ...	...	Trephined.	Only three attacks, but without loss of consciousness, after operation till time of report.
51	Pitha'schen Klinik, allgemeine milit. ärztl. Zeitung, 1, 1865; Schmidt's Jahrbücher, No. 127, p. 69. (Bulassa.)	M.	35	Gunshot.	Compound depd. fracture left parietal. Ball extracted.	2 mths.	Two months afterwards, seven epileptiform convulsions in four hours. Paralysis four months later.	Site of wound.	9 mths.	Trephined thirteen months after injury. Depressed fracture discovered. Quantity of pus found below.	Epilepsy cured; only very occasional attacks. Paralysis did not disappear till three months afterwards.
52	Archives Générales de Médecine, 1878, p. 535. (MacEwen.)	M.	22	Fall from second storey ten years ago.	Depressed fracture, right parietal.	6 mths.	Epileptic fits, which increased to ten or twelve a month. Cry before fits. Idiocy.	Over depressed bone where traumatic aneurism middle meningeal artery was diagnosed.	12 yrs.	Trephined twelve years and six months after injury. Bone found depressed, and old clots of blood found and removed.	Fits returned some weeks after operation, but at further intervals. Faculties restored. Seven months afterwards walked in hot sun, became insensible, and died in twenty-two days.

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Opration.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
53	Archives Générales de Médecine, 1878, p. 541. (Echeverria.)	M.	18	Crushed by wheel of carriage in childhood.	Depd. fract. right parietal.	Soon after.	Epileptic fits with attacks of vertigo. Violent fits of homicidal mania came on a few months before admission.	Over depressed spot.	Some years.	Trephined some years after injury; two crowns, and elevation of portion between. Fragment two inches long and one broad removed, which had pressed on brain.	Wound healed first intention. Had no fits for twelve days; then left hospital. No subsequent record.
54	Cooper's Lectures on Surgery, vol. i. p. 308. (Birch); also related by Wells in Chelius' System of Surgery, vol. i. 1845, p. 416.	M.	18	Blow with hammer.	Slightly depressed fract. right parietal.	Short time.	Epileptic fits for four years. Paralysis left side.	Over narrow chink right parietal.	4 yrs.	Trephined more than four years after injury. Fit during operation. Bone attached to dura mater. Small piece of bone embedded in dura mater, the latter thickened around it.	Fits continued for nearly a fortnight. Paralysis somewhat improved. Left hospital before wound healed. Ten months later paralysis much better, but liable to fits when angry or excited.
55	Medical Times and Gazette, June 9, 1860. (Hey.)	M.	50	Not stated.	Compound deprd. fract. parietal.	...	Epilepsy.	Over fistulous track, into which a probe could be passed for two inches between the inner table and dura mater. Discharge of pus from fistula ever since injury.	2 yrs.	Trephined. Bone of uniform thickness.	No fits for six weeks; subsequently slight return.

56	Lancet, 1873, vol. i. p. 799. (Thompson Dickson, Bryant.)	M.	16	Severe fall (no concussion).	Wound of scalp over left parietal eminence. No known fracture. Wound healed in a week.	1 wk.	Epileptic fits came on, occurring at intervals of a week and lasting a quarter of an hour. No convulsions, but unconscious. Hebetude; memory and general health failing.	Over cicatrix, sensitive on pressure, and painful at times.	4 yrs.	Trephined four years after injury. Fit while under chloroform. Thickening of bone found. No fracture.	Fits recurred at intervals, especially when depressed by diarrhœa or insufficient food. Report made eighteen months afterwards. Had then had no fits for six months and had returned to work.
57	Jour. of Ment. Scien., July 1874. (Syme.)	M.	Adt	Fall from carriage.	Wound. No fracture.	6 yrs.	Epileptic fits, followed by maniacal paroxysm; spun round and round for eight or ten days.	Over well-marked cicatrix, pressure on which caused rigidity of right arm.	...	Trephined. Half the portion removed was thickened, and the groove for the artery shallowed.	One maniacal attack only since operation. Epilepsy continued, suffering at monthly intervals. Remained sane with trifling exceptions.
58	Unpublished. (Kirkwood.) Willett's Case.	M.	16	Fall 12 feet (concussion).	Wound. No fracture.	3 yrs.	Epileptic fits.	Over scar, pressure on which caused pain.	1 yr.	Trephined four years after injury. Improved. Trephined three weeks afterwards; fits, fever. Nothing found at either operation.	Improved. Slight fits eight weeks afterwards; four fits at night (whereas before they had been at day) in eight months.
59	St. Louis Med. and Surg. Jour., May 1870, p. 205. (Bauer.)	M.	26	Blow.	Right parietal protuberance.	10 or 12 yrs.	Epileptic fits, increasing till ten a day. Loss of intellect. General paralysis.	... ...	...	Trephined sixteen years after injury. Two crowns. Immediate improvement of condition.	After wound healed power of motion returned, and intellect improved.

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
60	Brit. Med. Jour., 1880, vol. ii. p. 624. (Bellamy.)	M.	14	Blow with poker.	Swelling right parietal region.	1 yr.	Pain for a year, then epileptic fits once a day: had periods of very frequent fits, twenty or thirty daily.	Over fissure of Rolando, low down, over centre for arm and lip. No scar nor depression.	...	Trephined seven years after injury. Nothing found. Bone healthy. Dura mater seemed to bulge.	Fits occurred again eight weeks after trephining. but ultimately much improved.
61	Brit. Med. Jour., Feb. 1868, p. 199 (Balfour); Edin. Med. Jour., 1868, pp. 756 and 775. (Watson.)	M.	15	When three months old suddenly lost consciousness. A depression found on left side of head, and was paralysed right side, but no known blow or fall.	Depression left side of head.	5 yrs.	Epilepsy. Paralysed. Almost brutal imbecility. Twisting of right hand and arm. Fits more frequent in daytime; after operation more frequent at night.	Over an apparent crack, but none found on division of scalp.	10 yrs.	Trephined fifteen years after injury. Bone somewhat thickened, but otherwise healthy. Dura mater healthy.	Relief of fits for a time, and roused out of his imbecile state. Though fits never quite ceased, he regained mental power to some extent, and could walk again. Died two years later. Old clot found in one of the convolutions of the brain, where a cyst had formed.

TABLE III.

Four Cases in which no Improvement followed Trephining.

62	Medicinische chirurgische Zeitung, Innsbruck, 1825, Bd. 1, p. 446. (Wattmann.)	M.	Yg.	Bursting of gun. Blunt edge of breech driven in skull, but extracted.	Compound depressed fracture frontal.	Some time.	Epileptic convulsions coming on several times a day for two or three days, then absent a fortnight or more.	Over depressed cicatrix, at which brain could be felt pulsating.	Some years.	Trephined four years after injury. One splinter found and hard scar in dura mater. Bone healthy and replaced.	Epilepsy ceased as long as wound suppurated and opening left for discharge, but came on again when wound closed.
63	Chicago Med. Jour., 1859; American Jour. Med. Science, 1860, vol. xxxix. p. 282. (Brainard.)	M.	16	Blow when infant.	Depressed fracture left superior part frontal.	...	Epileptic fits for several years.	Over depression at seat of blow.	Several years.	Trephined. Bone found absorbed, thickened around, and spongy.	No improvement in epilepsy.
64	Bell's Principles of Surgery, 1826, vol. ii. p. 411. (J. Bell.)	M.	22	Head wedged between two beams.	Compound depressed fracture frontal sinus.	...	Unremitting pain and discharge of matter from nose for five years. Then fall on same place, followed by epilepsy; three or four fits daily for six months.	Over bony swelling at situation of frontal sinus.	6 mths.	Trephined five or six years after injury. Bone very thick; only outer plate perforated. Injections passed through the hole thus formed down nose.	No improvement by keeping open the wound, so it was allowed to close.
65	Brit. Med. Jour., 1881, vol. i. p. 342. (West.)	F.	25	Cut.	Wound forehead when nine years old.	...	Epileptic fits since five years old, but much aggravated by the fall when nine years old.	Scar.	20 yrs.	Trephined sixteen years after injury.	Fits better for ten days; then gradually worse. Became dangerous, and was confined in asylum.

TABLE IV.

Seventeen Cases in which Death followed Trephining.

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition Found on Trephining.	Post-mortem Examination.	Result.
66	Langenbeck, Bd. iv. p. 75. (Kern.)	...	...	Injury not stated.	Depd. fracture.	...	Epileptic fits often recurring.	... ...	...	Trephined four times. Nothing found on trephining.	Large splinter two inches from edge of last trephine hole.	Death.
67	Gross' System of Surgery, vol. ii. p. 177. (Gross.)	M.	33	Injury when eight years old.	Depd. fracture, parietal and frontal bone.	14 yrs.	Epileptifm. convulsions. Speech and memory affected later.	Overdepressed spot.	11 yrs.	Trephined 25 years after injury. Depressed bone removed.	Perforation of membranes by exostosis on inner surface of injured bone. Brain softened. Enormous clot of black blood.	Death in five days. Dr. Gross says the pressure upon the brain being removed, the diseased vessels at the seat of the softening gave way, causing apoplexy.
68	Brit. Med. Jour., vol. i., 1865, p. 611. (Bolton.)	F.	16	Blow with coal-pick.	Compd. depd. fracture, left parietal, one and a half inch from sagittal suture, in line with auditory orifice.	5 yrs.	Mental deterioration; irritable; could not go on errand without forgetting commission unless written. Severe frontal headache. No pain region of blow. Epileptic fits increasing, but not severe. Increased mental deterioration when fits came on.	Over cicatrix, with distinct depression of bone beneath.	5 yrs.	Trephined ten years after injury. Splinters of bone found projecting through dura mater and both layers of arachnoid.	Inflammation of brain and membranes about Broca's convolution.	Right hemiplegia came on second day, but subsided before death. Death fifth day. Aphasia on setting in of symptoms till death.

69	Berliner klinische Wochenschrift, 1865, No. 59, p. 389. (Doutrelepont.)	M.	22	Not stated.	Compd. depd. fract. left frontal.	6 weeks.	Wound healed first intention; but opened and pus and splinters came out. On healing, epileptic fits came on, recurring every two or three weeks. Fistulous opening formed; piece of bone taken away. Fits recurred. Lost consciousness during fits.	A little to the right of a defective spot in external table.	...	Trephined ten months after injury. Splinter penetrating dura mater. Nothing abnormal in dura mater.	Post-mortem not allowed.	Progressed favourably till eleventh day after operation, then four fits in succession. Progress towards recovery continued; small piece of bone removed; wound granulated well. Discharged two months after operation. Four days afterwards went to an entertainment; drank a little wine and brought on a fit; and two violent fits sixteen days later, followed by sopor, vomiting. Died seventeen days after this.
70	Chelius' System of Surgery, vol. i., 1845, p. 416. (Green.)	F.	17	Fall from second floor. (stunned).	Fracture right parietal. No wound.	2½ years.	Epileptic fits, somewhat cataleptic in type.	Over broad fissure extending from centre of sagittal across parietal to lambdoidal. Teguments over it pulsated with brain.	2½ years.	Trephined five years after injury. Lacerated hole in dura mater found. No depression felt. Arachnoid and pia mater incised.	Dura mater deficient whole length of fissure. Inflammation of brain and membranes.	Fit following day, and then another. Hernia cerebri. Death sixteenth day.

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition Found on Trephining	Post-mortem Examination.	Result.
71	Lectures on Surgery (Cooper), vol. i p. 326. (Birch.)	F.	22	Fall on chest of drawers.	Wound with contusion of skull.	8 mths.	Pain in head. Epilepsy relieved by purulent discharge nose and ears, which when stopped, the symptoms came on again. At times comatose.	Over old wound, pressure on which caused uneasiness. Previous incision. Bone carious, and symptoms for some time relieved. Pus escaped through opening of bone, evidently influenced by pulsations of brain.	11 mths.	Trephined nineteen months after injury. Diseased bone found. Dura mater inflamed and gangrenous.	Dura mater sloughy; abscess in longitudinal sinus.	Died next day.
72	Pott's Surgical Works, p. 127. (Pott.)	M.	...	Blow.	Small wound; well in a few days.	7 wks.	Pain in head. Three or four epileptifm. fits.	Over spot where wound said to have been, pressure on which caused convulsions. Previous incision. Bone carious.	10 or 11 wks.	Trephined. Pus between bone and dura mater.	Pleuro-pneumonia. Head healthy.	Recovered from head injury. Died from pleuro-pneumonia.
73	Abercrombie, Diseases of Brain, p. 183. (Clossy.)	...	...	Blow.	Over left parietal.	...	Epileptic fits several times a day for three years.	Over place of old injury; previous incision into which disclosed an elevation of bone.	3 yrs.	Trephd. Bone spongy, and contained pus.	Small circular roughness on inner surface of bone. Abscesses in pia mater.	Died comatose in a few days.

74	Journal der Chirurgie (Graefe und Walther). Band iv. Heft 1, p. 154.	F.	20	Scrofulous abscess.	Right parietal.	...	On healing of abscess, epilepsy, partial paralysis left arm. Amaurosis both eyes.	Over cicatrix of bone, which yielded to pressure.	2 yrs.	Trephd. Bone thinned and irregular. Dura mater absorbed; very little serum escaped.	Collection of water in right ventricle. The stretched brain had thinned the parietal bone. Layer of lymph at base of cerebellum. Brain softer than natural.	Slight epileptic convulsions after operation. Hernia cerebri, which was cut off; improvement. Then giddy, headache, vomiting. Paralysis left side, convulsions, sopor. Large quantity of fluid escaped. Death in a few weeks.
75	Med. Times and Gaz., Aug. 18, 1860. (Bryant.)	M.	38	No blow.	Painful swelling, left parietal, discharging.	10 mths.	Great pain for ten months. Then epileptiform convulsions, chiefly of left face and right side of body. Right hemiplegia. No loss of consciousness. Death appeared imminent.	Over situation of sinuses, which discharged pus, and communicated with dead bone.	Epilepsy came on a few days before operation.	Trephd. Bone soft & cheesy. Dura mater inflamed, adherent, and granulating. Nodule of new bone grew from circle removed, which had pierced inwards.	Dura mater adherent. Pus above and below. Gummata liver, spleen, and testes.	One slight fit, then pain in head, and fits ceased. Trephine hole filled in, but bone still inflamed and rough. In two months fits came on again, and in four months hemiplegia, pyæmia, and death.
76	Langenbeck's Chirurgie, Band iv. p. 15.	...	...	Blow.	Wound of head.	...	Epileptic fit daily. Pain in scar.	Over old scar.	Several years.	Trephd. (two crowns). Nothing found.	Odontoid process found pressing on spinal cord.	Death in two days.

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Where Trephined, and Condition of Head before Operation.	Duration of Epilepsy.	Condition Found on Trephining.	Post-mortem Examination.	Result.
77	Edin. Med. Jour., 1865, p. 56. (Owen Rees.)	M.	27	Fall.	Wound over left side head.	3 weeks.	Epileptic fits almost daily. Pain and difficulty in speech came on.	Over cicatrix.	20 mths.	Trephined one year and nine months after injury. Nothing found. Dura mater not opened.	Patch of lymph on dura mater corresponding to trephine hole. Dura mater lacerated, but could not be determined whether by operation or by softening. Acute arachnitis left side. Parietal bone fancied to be rather thick.	Fits ceased for thirty-six hours, then began again. Comatose, with brain symptoms. Died fourth day.
78	Breger, De Trepanatione Cranii in Morbis Capitis, 1831. (Riecke.)	M.	22	Fall from tree.	Fracture of right parietal bone.	6 mths.	Epileptic fits increasing.	Sensitive spot on pressure.	9½ years.	Trephined ten years after wound. Some ounces of clear water escaped.	Fissure of parietal filled with cartilage; under this a "water blister," which had pressed on brain.	Well till third day, then convulsions and death.
79	Abercrombie on the Brain, p. 186. (Howship.)	M.	18	Blow with ruler at school.	Wound of head.	6 yrs.	Fistula discharging pus for six years, then healed, and epilepsy came on. Sight impaired.	Over seat of injury.	...	Trephined, nothing abnormal found. Bone and dura mater both sound.	Pia mater under injury showed traces of chronic inflammation. Middle lobe hardened.	Died third day.
80	Lehrbegriff der Wundarzheil-	M.	...	Blow in childhood.	Over frontal bone, probably wound.	...	Epilepsy.	Over mark of blow.	20 years.	Trephined. Not stated what found.	Pus upon and under dura mater, upon pia	Second day symptoms of encephalitis. Died

	kunst, 2d Auflage, 1793, Bd. iii., 2d edit. (Bell.)										mater, and immediately upon brain.	third day.
81	Annalen der chirurgischen Abtheilung-Krankhauses in Hamburg, 1828, Bd. i. p. 82. (Friecke.)	F.	19	Fall on head.	Middle of right parietal. No wound nor fracture	...	Pain at spot increasing, first at night only, then in day also; at first periodic, then continuous. Then epileptic fits, and sixth year after injury paralysis lower limbs and left arm. Aphasia.	Over painful spot.	...	Trephined seven years after injury. Dura mater adherent; nothing else abnormal found.	No morbid change in head or other cavities found at the post-mortem.	Improved and lost pain till fourth day, when rigors, pain, sopor, and death.
82	Amer. Med. Times, 1862, June 7, p. 319. (E. S. Cooper.)	M.	41	Blow.	Depd. fracture in three places. One central over longitudinal sinus at coronal suture; second, three-quarter inches to left of first, and painful on pressure; third, one and a half inches behind, and half-inch to right of last.	...	Epilepsy. Memory and mental faculties gone. Right arm and leg partially paralysed.	Over tender spot, *i. e.* second depression.	7 yrs.	Trephined. Bone found not to be depressed on inner side. Only outer table absorbed. Great hæmorrhage from scalp.	No post-mortem.	Mental faculties regained in three or four days. Paralysis passed off. Seventh day secondary hæmorrhage of some kind, which when stopped, patient worse. Seven weeks after operation worse than before, and mental faculties again went. Discharged, and died in bed night after he left hospital.

TABLE V.

Cases in which no Details are Given.

A.—*Complete Recovery.—Twenty-seven Cases.*

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
1	Phil. Med. and Surg. Reporter, July 20, p. 356; Sydenham Year Book, 1861, p. 245. (Ayres.)	...	...	Not stated.	Frontal bone.	...	Epileptiform convulsions.	...	... ...	Complete cure.
2	Wounds of Head, Guthrie, p. 82. (Morel.)	...	...	Not stated.	... ...	...	Epilepsy after many years of suffering.	6 mths.	Trephined. Nothing found.	Cured.
3	Histoire de l'Académie des Sciences. (Boucher.)	M.	8	Blow.	Compound depd. fracture.	...	Epilepsy.	...	Trephined (two crowns).	Gradual but complete cure.
4	Mémoire de l'Académie de Chirurgie de Quesnay, Jan. (Maréchal.)	...	...	Slight blow.	... ...	...	Epilepsy.	Several years.	... ...	Cured.
5	Sulla Trepanatione della Cranio, Annali Univ. Med. Giugno, p. 56. (Cinselli.)	...	...	Nature of injury not stated.	Bruise left parietal.	6 mths.	Epilepsy.	...	... ...	Cured.
6	Cooper's Lectures on Surgery. (Cooper.)	M.	Adt.	Blow.	Upper part frontal bone. No wound.	...	Epilepsy.	1 year.	... ...	Complete cure.

7	Copeland's Medical Dictionary, article Epilepsy. (Elliotson.)	...	...	Nature of injury not stated.	...	...	...	Epilepsy.	...	Trephined. Depressed bone with spicula of internal table removed.	Complete cure.
8	Transylvan. Journal of Med., vol. ii. (Elliott.)	...	...	...	...	...	...	Epilepsy.	...	Trephining.	Complete cure.
9	London Med. and Surg. Journal, 1826. (Riboli.)	...	...	...	...	...	...	Epilepsy.	...	... ...	Complete cure.
10	Centur, 1 Obs. 66. (Rhodius.)	...	...	...	...	...	...	Epilepsy.	...	... ...	Complete cure.
11	Travers on Constitutional Irritation. (Buch.)	...	...	...	...	...	...	Epilepsy.	...	... ...	Complete cure.
12	Virginian Med. Monthly, 1837. (Johnson.)	...	...	...	...	...	...	Epilepsy.	...	... ...	Complete cure.
13	Dr. Billings' Table, American Journal Med. Science, 1861. (Haliban.)	...	...	...	...	...	...	Epilepsy.	...	... ...	Complete cure.
14	Boston Med. Mag., vol. i. (Warren.)	...	...	...	...	...	...	Epilepsy.	...	... ...	Complete cure.
15	Boston Med. Mag., vol. i. (Warren.) 2d case.	...	...	...	...	...	...	Epilepsy.	...	... ...	Complete cure.
16	Boston Med. and Surg. Journal, vol. xxxi. (Dixon.)	...	...	...	...	...	...	Epilepsy.	...	... ...	Complete cure.

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
17	Philadelph. Med. Examiner, 1849. (Pancoast.)	...	...	...	... ...	...	Epilepsy.	...	... ...	Complete cure.
18	St. Louis Med. and Surg. Jour., vol. vii. (Pope.)	...	...	...	... ...	...	Epilepsy.	...	... ...	Complete cure.
19	Western Lancet, vol. ix. (Hobson.)	...	...	...	... ...	...	Epilepsy.	...	... ...	Complete cure.
20	Western Lancet, vol. ix. (Hobson.) 2d case.	...	...	...	... ...	...	Epilepsy.	...	... ...	Complete cure.
21	Western Lancet, vol. ix. (Hobson.) 3d case.	...	...	...	... ...	...	Epilepsy.	...	... ...	Complete cure.
22	Boston Med. and Surg. Jour., vol. xxviii. (Trowbridge.)	...	...	...	... ...	...	Epilepsy.	...	... ...	Complete cure.
23	Boston Med. and Surg. Jour., vol. xxviii. (Trowbridge.) 2d case.	...	...	...	... ...	...	Epilepsy.	...	... ...	Complete cure.
24	Mitchell's Materia Med. and Therapeutics. (Mitchell.)	...	...	...	... ...	...	Epilepsy.	...	... ...	Complete cure.
25	Wansennger, Manuale di Operationen Chir., 1684, p. 20. (Chabden.)	...	...	...	... ...	...	Epilepsy.	...	... ...	Complete cure.

26	Traité Complet de Chirurg., Obs. cxlv. t. 1, 1771, p. 546. (La Motte.)	...	...	...	...	...	...	Epilepsy.	...	...	...	Cure.
27	Massachusetts Gen. Hosp. Surg. Records, vol. xlv. p. 196. (Bigelow.)	...	...	...	...	...	..	Epilepsy.	...	...	...	Complete cure.
	B.—*Improvement.—Five Cases.*											
28	Transactions State Med. Society of Ohio, 1843. (Howard.)	..	..	...	...	...	...	Epilepsy.	...	...	...	Improvement.
29	Western Journal of Medicine and Surgery, vii. (Yandell.)	...	7	...	...	..	...	Epilepsy.	...	...	...	Improvement.
30	American Jour. Med. Science, Billing's Table. (Blackman.)	..	...	...	...	...	...	Epilepsy.	...	...	...	Improvement.
31	New York Physiolog. and Med. Legal Journal, Feb. 1875. (Darby.)	...	...	..	...	...	...	Epilepsy.	...	...	...	Improvement.
32	Massachusetts Gen. Hosp. Surg. Records, vol. cvi. p. 98. (Hodges.)	...	...	...	...	...	...	Epilepsy.	...	...	...	Improvement.

C.—*No Improvement.—Three Cases.*

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
33	Gross' Surgery, vol. ii. (Gross.)	...	...	...	... ...	...	Epilepsy.	...	... ...	No improvement.
34	Western Lancet, vol. ix. (Hobson.)	...	...	...	... ...	...	Epilepsy.	...	... ...	No improvement.
35	Brit. Med. Jour., 1865, vol. i. p. 611. (Travers.) Reported by Russell.	...	...	...	... ...	...	Epilepsy.	...	... ..	Worse.

D.—*Death.—Thirteen Cases.*

No.	Reference.	Sex.	Age.	Cause.	Nature of Injury.	Time before Symptoms came on.	Symptoms.	Duration of Epilepsy.	Condition Found on Trephining.	Result.
36	Billings' Table, Amer. Jour. Med. Scien. (Blackman.)	...	...	...	... ...	...	Epilepsy.	...	... ...	Death.
37	Billings' Table. (Blackman.) 2d case.	...	...	...	... ...	...	Epilepsy.	...	... ...	Death.
38	Billings' Table. (Blackman.) 3d case.	...	...	...	... ...	...	Epilepsy.	...	... ...	Death.
39	Billings' Table. (Edwards.)	...	...	...	... ...	...	Epilepsy.	...	... ...	Death.
40	Billings' Table. (Edwards.) 2d case.	...	...	...	... ...	...	Epilepsy.	...	... ...	Death.

41	Gross' Surgery, vol. ii. (Gross.)	...	...	...	...	...	...	Epilepsy	...	...	Death.
42	Gross' Surgery, vol. ii. (Gross.) 2d case.	...	...	...	...	...	...	Epilepsy.	...	...	Death.
43	Billings' Table. (Tripler.)	...	...	...	...	...	...	Epilepsy.	...	...	Death.
44	Guthrie, Affections of Brain, p. 82. (Vacher.)	...	...	No injury.	...	...	...	Epilepsy.	...	...	Death.
45	Chirurgische Beobachtung, p. 13. (Schwarz.) (Steidele.)	...	...	Wound.	...	...	...	Epilepsy.	...	...	Death.
46	Cooper's Lectures on Surgery, vol. i. p. 170. (Farre.)	...	...	Concussion of brain.	...	...	...	Epilepsy.	...	...	Death.
47	Dictionnaire des Sciences Médicales (article Trepan). (Boyer.)	...	...	...	...	...	...	Epilepsy.	...	...	Death.
48	Bell's Surgery, vol. ii. (Bell.)	...	...	...	...	...	...	Epilepsy	...	...	Death.

A CASE OF RHEUMATIC PURPURA,

WITH NOTES.

BY

J. WICKHAM LEGG, M.D.

By purpura we mean the appearance of numerous spontaneous hæmorrhages, either under the skin or from the mucous membranes; in short, the state which the old French pathologists would have called a hæmorrhagic diathesis.

I suppose no one would be inclined to maintain that this purpura is a pathological entity, due always to the same cause. It is seen in such a multitude of diseases, that, before dealing with the following case, it may be well to put side by side the different states in which purpura may be found.

(i.) The acute purpura which is seen in eruptive diseases. This proves rapidly fatal, and often ends in less than forty-eight hours. Sydenham noticed the hæmorrhagic form of both smallpox and the plague,[1] and how fatal it was. Cornil has examined very carefully the pustules in hæmorrhagic variola, but it can hardly be said that he has made out more than that the corpuscles escape in surprising abundance into the rete mucosum; he inclines to an escape *per diapedesin*.[2]

The cause of the infective purpura is, of course, set down by the extreme supporters of the germ theory to the presence of bacteria. Ceci even names one germ the *Monas hæmorrhagicum*, an organism which he has found in patients who have died from hæmorrhagic smallpox.[3] It may be well not to forget in these cases the influence of the high temperature. Bouchard put a dog into a warm bath, so as to keep his temperature at 44° C., and found that he had caused ecchymoses of the tissue of the heart.[4] The parenchymatous degeneration of the glands

[1] Thomas Sydenham, Obs. Med. iii. 2, § 24, ed. Greenhill, p. 128.
[2] Cornil, Bulletins de la Société méd. des Hôpitaux de Paris, 1879, p. 322.
[3] Ceci, Arch. f. exp. Path. 1881, Bd. xiii. p. 641.
[4] Bouchard, Comptes rendus des Séances de la Société de Biologie, 1870, p. 27.

and muscles caused by fever appears to be the same as that caused by the agents spoken of in the next paragraph but one, (iii.,) phosphorus, alcohol, and others.

Purpura in typhoid fever is thought to be a dangerous complication, and nearly all the cases recorded have proved fatal. Schneschkow has, however, lately published a case in which purpura appeared on the sixteenth day of typhoid fever in a child of six; the attack was severe, bleedings taking place from the nose and mouth, under the skin, with the urine and stools; pains were felt in the right knee. On the 21st day of the fever the bleedings ceased, and the patient made a good recovery.[1]

Some years ago I was asked to see a little girl suffering from purpura and epistaxis during the progress of whooping-cough. The patient did well. I see that a case of the same kind has been lately recorded in Italy. But Walker, so long ago as 1797, printed a case of a hæmorrhagic diathesis coming on and disappearing during an attack of whooping-cough.[2]

(ii.) Next to the infective, we may put the toxic, purpura, which follows the action of so many drugs and poisons, including snake-bites.[3] It would be a hard matter to make a complete enumeration of the drugs which cause hæmorrhage as part of their physiological action. That this was a property of iodide of potassium and bromide of potassium has long been known. Ordinary kitchen-salt also possesses this power, and the mode in which it acts has also been made out. It causes hæmorrhage *per diapedesin*. Prussak injected a 2 *per cent.* solution of chloride of sodium into the lymph sac of frogs, and found that the red corpuscles began to escape through the uninjured vessels, and to be visible in the tissues around. He also injected daily a certain quantity of chloride of sodium into the connective tissue of a rabbit, and after death numerous ecchymoses were found in all the organs.[4] The experiment on the frog I repeated many times with success in 1871. A crystal of chloride of sodium was put under the skin, and the circulation in the web of the foot watched under the microscope. The red corpuscles were seen applying themselves to the sides of the capillaries, escaping through the wall, and they became visible in the tissues

[1] Schneschkow, Medicinskoje Obosrenije, 1881, Feb. abstract in Centralblatt f. klin. Med. Bd. ii. 1882, p. 163.

[2] Walker, Duncan's Annals of Medicine for 1797, vol. ii. p. 231.

[3] Dr. Weir Mitchell thinks the hæmorrhage in snake-bites and in yellow fever to be due to the weakened vessels. (American Journal of the Medical Sciences, 1869, vol. lviii. p. 120.)

[4] Prussak, Sitzungsberichte der math.-naturw. Classe der kaiserl. Akad. der Wissenschaften, Wien, 1867, Bd. lvi. Abth. ii. p. 13.

around. This escape of the corpuscle would be either entire or in part. In the latter case, after, say, one-half of the corpuscle had made its way through the wall of the vessel, the remainder would stay attached to the wall, but at length be washed away and disappear in the general circulation. At the same time I also made a number of observations upon the action of iodide of potassium and bromide of potassium, with other alkaline chlorides, iodides, and bromides, thinking that they too might cause the same hæmorrhage *per diapedesin* as the chloride of sodium; but I saw no such escape of the red corpuscles after their action. And I may say that the observations were all made at the same time of the year (I fancy in the spring) both the successful and the unsuccessful ones.[1]

(iii.) From this toxic purpura we descend by easy stages to the purpura of disease—stages so easy that it is hard to say where the toxic influence ends and that of disease begins. In a paper published in these Reports some five years ago,[2] I endeavoured to bring under one head, to which I gave the name *Icterus gravis*, several varieties of disease, some caused by drugs, others idiopathic. These states have many common symptoms, one of the most prominent of which is purpura, and the appearances seen after death are so alike, that it would be hard even for an accomplished morbid anatomist to distinguish them. Such are chronic poisoning by phosphorus, arsenic, antimony, chloroform, chloral, alcohol, lead, silver, and many other drugs, yellow fever, acute yellow atrophy of the liver, and what is called bilious typhoid. In all these it is possible that the cause of the purpura may be the degeneration of the vessels, in itself only a part of the wide-spread cloudy swelling, or parenchymatous degeneration of the glands and muscles of the body, like that caused by febrile high temperatures.

After these come the purpura of anæmia, allied to the foregoing in the fatty degeneration of the tissues, the purpura of Bright's disease and of cirrhosis, not forgetting the hæmorrhages so often seen when a case of long-continued jaundice is about to end fatally. Three years ago Dr. Gee called attention to the presence of purpura in cases of chronic nephritis;[3] (and I have now under my care a case of purpura accompanying well-marked Bright's disease); some persons, it is well known, look upon Bright's disease as one of the manifestations of long-continued intoxication with alcohol. So also in cirrhosis. In the early stages of cirrhosis purpura is very common. I think that hardly sufficient atten-

[1] I published the results in 1872 in my Treatise on Hæmophilia, p. 91, note.
[2] St. Bartholomew's Hospital Reports, 1878, vol. xiv. p. 43.
[3] Samuel Gee, St. Bartholomew's Hospital Reports, 1880, vol. xvi. p. 47.

tion has been called to the repeated epistaxis, the spongy gums, and the purpuric spots of early cirrhosis. Sometimes the hæmorrhages are noticed earlier than the hepatic symptoms. There has been under my care quite lately in Luke's Ward a man, by occupation a cellarman, who was sent to me on account of purpura on the limbs, epistaxis, and swollen gums; the large liver and history of the abuse of wine not having been noted. The hæmorrhages in cirrhosis are sometimes explained when they occur in the portal tract by attributing them to congestion. This does not, however, explain hæmorrhages in parts far distant, like the limbs and gums. I would rather suggest that as hæmorrhage is one of the results of an acute poisoning by alcohol, so it may also follow a slow poisoning, and that the purpura is only one sign of the action of alcohol on the body, of which the chief damage falls upon the liver. The swelling of the spleen in cirrhosis I take to be also a part of the general disorder, not due solely to the congestion. So in Bright's disease, often due to some poison, the purpura may be part of the general action of the drug, of which the nephritis is a local expression. In long-continued jaundice, purpura is common as the jaundice is about to prove fatal, and it is possible that this purpura follows the long-continued circulation of the bile in the body.

(iv.) There comes next a large number of diseases in which purpura is noticed, but in which even a speculative explanation is wanting. For example, agues, of which paroxysmal hæmaturia is an instance, a disease which has lately been much studied, of which apparently Hippocrates spoke when he described the cold as doing harm to those who make bloody water in cold weather.[1] Professor Porter, in a paper communicated to the Medico-Chirurgical Society by Mr. Marsh, has described traumatic hæmorrhages as the result of ague.[2] Syphilis, phthisis, and general tuberculosis are sometimes attended by purpura.

(v.) Purpura due to congestion may next be spoken of. It appears to be a form more readily explained than the others. Cohnheim, after tying the vein which arose from some transparent part, as the web of the foot or the tongue, noticed, among other phænomena, that the red corpuscles began to escape in great numbers through the wall of the apparently uninjured vessel,[3] a true hæmorrhage *per diapedesin*, such as I have myself observed after the action of chloride of sodium. Thus

[1] Hippocrates, De Liq. Usu, cap. 6, Littré's ed. t. vi. p. 134.
[2] Porter, Med. Chir. Trans. 1876, vol. lix. p. 136.
[3] Cohnheim, Arch. f. path. Anat. 1867, Bd. xli. p. 220.

the purpura seen in the lower limbs in heart-disease is best explained.

(vi.) In former times one of the favourite ways of explaining constitutional hæmorrhage was by invoking a change in the blood. It has already been said that purpura accompanies anæmia; and it is not always that the loss of blood is the cause of the anæmia, though this appears to be very commonly the case. One result of hæmorrhage is an increase of the colourless blood corpuscles; and an increase in the colourless corpuscles seems, in its turn, to be often a cause of hæmorrhage. How common purpura and epistaxis are in leucæmia need not be noticed. The white corpuscles form masses or balls very readily in the circulation, and these will become emboli, and the plugging of the small arteries may lead to their aneurysmal dilatation and rupture of the vessel.

(vii.) This mention of the purpura allied to the increase of the colourless corpuscles leads us to the hæmorrhages seen with enlarged spleens. The conjunction of an enlarged spleen with epistaxis was repeatedly noticed by Hippocrates,[1] and in our day Virchow has specially insisted on the concurrence of an enlarged spleen with the hæmorrhagic state;[2] Dr. Habershon has also pointed out how commonly the spleen is enlarged in cases of purpura.[3]

Purpura is associated with many diseases in which a large spleen is seen; all the fevers, including the agues, and syphilis, (I believe that Dr. Gee was the first to point out how often the spleen in syphilis is enlarged,) cirrhosis of the liver, and many others. It thus becomes hard to say what is the precise relation of the enlarged spleen to the hæmorrhages.

(viii.) Dr. Hilton Fagge has drawn attention to the association of purpura with multiple sarcomata.[4] It has long been known that rapidly growing tumours often show hæmorrhages in their substance, and this has been explained by the tendency to rupture of all newly-formed vessels, whether in the fœtus, suppurating granulations, or the fungus hæmatodes.

(ix.) Then follows the purpura seen in some cases of rheumatism, to which Schönlein drew attention under the name of peliosis rheumatica.[5] I cannot think that there is any special variety of purpura in the case which I am about to relate; it

[1] Hippocrates, Epidemics, Book iii. Littré's ed. t. iii. p. 121, and Epidemics, Book ii., Littré's ed. t. v. pp. 87 and 95.

[2] Virchow, Allg. Störungen der Ernährung und des Blutes in Handb. d. spec. Path. u. Ther. Erlangen, 1854, p. 247.

[3] S. O. Habershon, Guy's Hospital Reports, 1857, p. 89.

[4] Hilton Fagge, Guy's Hospital Reports, 1881, p. 1.

[5] Schönlein, Allgem. u. spec. Path. u. Ther. Freyburg, 1837, Bd. ii. p. 45.

would seem to be allied to, if not identical with, erythema nodosum or hæmorrhagicum, and the purpura urticans of Bateman.[1] As long ago as 1824, Samuel Plumbe asserted that erythema nodosum was nearly allied to purpura.[2] It might be that this rheumatic purpura is allied to the toxic purpuras. Acute rheumatism is thought by some to be caused by the appearance in the blood of poisonous waste products, and they appeal to the appearances caused by lactic acid as proof of their views.

(x.) After having excluded all the foregoing states, there will remain a certain number of cases of purpura; not so many as might at first sight be thought, which cannot be ranged under any of these heads, and which must therefore be called idiopathic purpura. Of these cases the pathology is, if possible, more obscure than those which have preceded it.

Such being the various clinical states in which purpura is seen, what are the appearances seen after death which may reasonably be set down to having a share in causing the purpura? There are records of careful examinations after death, some of the later ones made with all the appliances that modern histologists demand, and yet no changes have been discovered either with the naked eye or with the microscope. It is possible that this may be due to imperfect methods. For how long was the spinal chord in locomotor ataxy and other nervous diseases affirmed to be unchanged? Yet so competent an observer as Hayem described in one case marked changes in the vessels, while in another which he saw he was forced to own that nothing unnatural could be discovered.[3] And of the changes which have been found, it can hardly be said that they give any ready explanation of the cause of the hæmorrhages.

Dr. Wilson Fox was the first to point out any changes in the histology of the vessels in purpura. He found both the small arteries and the capillaries in the neighbourhood of the purpuric spots (but not in the spots themselves) to stain with iodine, the supra-renal capsules, the stomach and intestines, being also markedly amyloid. Dr. Wilson Fox also noticed certain points which have been strangely neglected by those who have followed him, but which seem to me to be of considerable importance: (1.) The presence in the blood during life of a great excess of white corpuscles, followed in a few days by a diminution of the excess, while the corpuscles themselves became very granular,

[1] Thomas Bateman, A Practical Synopsis of Cutaneous Diseases, London, 1813, p. 115.

[2] Samuel Plumbe, Practical Treatise on Diseases of the Skin, London, 1824, p. 375.

[3] Ruc, Union Méd. 1870, t. ix. série iii. p. 680.

some distinctly disintegrating, and some granular *débris* were seen in the field, corresponding in all essential characters to the granules seen in the cells; (2.) the trouble with which the purpuric limbs could be injected; and (3.) the appearance of an increase in size and number of the nuclei of the adventitia of the vessels in scattered spots and patches, chiefly in the neighbourhood of the extravasations.[1] It must be added that Dr. Wilson Fox's patient had contracted syphilis six months before his death, and that this constitutional disease was apparently the cause of his death.

Now the multiplication of the nuclei of the sheath of the vessels, spoken of by Dr. Wilson Fox, is a very important change. It is closely akin to the inflammatory processes which have been described by some other authors. Hayem has recorded three cases of purpura accompanied by multiplication of the endothelia of the artery and by obliteration of the vessel, to which he gives the name of hyperplastic endarteritis.[2] Max Zimmermann has found the walls of the arterioles, not of the arteries, thickened to twice their natural size, the greater part of this thickening being due to the increase of the adventitia, which was full of young cells; while in opposition to the appearances seen in Hayem's cases, the inner coat was hardly at all changed, and the capacity of the vessel unaltered. Many of the vessels in the neighbourhood were, however, obliterated.[3]

The last of Hayem's cases also presented another resemblance to Dr. Wilson Fox's in the presence in the blood of an excess of white corpuscles, a large number of which appeared to be young, smaller than usual, and with one large nucleus, while others were larger than natural and held two or three nuclei. Hayem is inclined to think that the white corpuscles may form into emboli, and thus lead to infarctions.[4] One of the results of emboli should be kept in mind, viz., that aneurysms may follow;[5] and this indeed has been seen in a case examined by Hayem and recorded by

[1] Wilson Fox, British and Foreign Medico-Chirurgical Review, 1865, vol. xxxvi. p. 480.

[2] Hayem, Comptes rendus des Séances de la Société de Biologie, Année 1870, p. 24, and Année 1876, p. 232.

[3] Max Zimmermann, Arch. d. Heilkunde, 1874, Jahrg. xv. p. 166.

[4] Panum found numerous ecchymoses as the result of embolism experimentally induced. (Arch. f. Path. Anat. 1862, Bd. xxv. p. 513.)

[5] I should like to say that this sequel to emboli had been pointed out by Dr. John W. Ogle (Transactions of the Pathological Society of London, 1857, vol. viii. p. 168, and Med. Times and Gazette, 1866, vol. i. p. 196), by Mr. Jolliffe Tufnell (Dublin Quarterly Journal of Medical Science, 1853, vol. xv. p. 371), by Mr. T. Holmes (System of Surgery, London, 1862, vol. iii. p. 353), and by Dr. Church (these Reports, 1870, vol. vi. p. 99), some years before Ponfick's paper in Virchow's Archives. (1873, Bd. lviii. p. 557.)

Huchard.[1] Numerous miliary aneurysms were found in the brain in the midst of hæmorrhagic points, and the walls of the vessels showed a marked "cellular irritation," granular infiltration, and fibroid transformations. These changes chiefly involved the sheaths. The woman was only 32 years of age: no like changes were seen in the heart, but no other organ seems to have been examined for vascular changes.

It seems quite possible, if there be any truth in the doctrine of aneurysm from embolism, that the infarction of plugs formed of the colourless corpuscles (which in some cases of purpura, at all events, are in excess) may lead to miliary aneurysms such as were found in this woman's brain, and which in her seem to have caused the multiple ecchymoses of that organ. It is much to be regretted that no other organ but the heart was examined. Her age would hardly be advanced enough to cause the aneurysms which have been so well described by Charcot and Bouchard.

The multiplication of the nuclei of the sheath of the vessels has been seen in other hæmorrhagic diatheses, viz., in the persistent and congenital hæmorrhagic diathesis of hæmophilia. The following case of Lindwurm's resembled Dr. Wilson Fox's in two particulars—the appearance of amyloid degeneration and in multiplication of the nuclei.

The cutaneous vessels of a bleeder, who had never had syphilis, and whose skin, from the crown of his head to the sole of his foot, showed not a single sound place, nothing but patches of pityriasis rubra, lichen ruber, eczema squamosum, ichthyosis, and fifty to sixty ulcers, were examined by Buhl. Besides a thickening of the papillæ and their epidermis, he found an overgrowth of the capillary vessels, and with this an increase in number of the nuclei of the capillaries, which also were readily stained by iodine.[2]

So also in Dr. Percy Kidd's case, the vessels all showed marked proliferation of the walls.[3] But I am bound to say that since Dr. Kidd published his case, I have examined the tissues in two cases of hæmophilia, and have been unable to detect any changes whatever in the vessels.

In scurvy there is a hæmorrhagic diathesis, and Uskow, about five years ago, described the vascular changes in the gums: the vessels are full of red or white corpuscles, apparently a thrombosis; the "lumen" may be greater than natural; where the white corpuscles prevail, there the cells of the endothelium

[1] Huchard, Bulletins de la Société Anatomique de Paris, 1870 (xlv. année), p. 172.

[2] Lindwurm, Zeitschrift f. rat. Med. 1862, Bd. xiv. p. 263.

[3] Percy Kidd, Med. Chir. Trans. 1878, vol. lxi. p. 243.

are swollen, but they were never seen proliferating; afterwards "fibrous bands" formed around the vessels, with "granulating cells" between them. The number of red corpuscles not altered, nor of white.[1]

In Ducastel's case of purpura, which was examined by Cornil and Frémont, there was found in a patch of purpura of the lower lip great dilatation of the vessels of the papillæ, fifteen to thirty times greater than natural, the connective tissue being thinner and more delicate than usual in the papilla. Throughout the patch of purpura there was a good number of emigrated leucocytes, but no red corpuscles.[2] This last appearance is hard to understand, and makes it doubtful if the patch were really purpura. In the skin, however, were found no such changes in the vessels, though here red corpuscles were discovered around them. Nowhere could any arteritis or periarteritis be found.

It will thus be seen that histology has but little help to give us in understanding the process of purpura. The change which is most constant, the overgrowth of the cells of some part of the wall of the vessel, does not readily explain an easy rupture of the wall. It may be noted that many of the causes of purpura are toxic in their source, such as the purpura seen after iodide of potassium, in poisoning by phosphorus, and in chronic jaundice. Had I been more successful in causing hæmorrhages in the web of the frog's foot after the injection of the iodide of potassium and other alkaline salts, I should have been more ready to set down all the toxic purpuras to the transpiration of the red blood corpuscles; but as it was only under the action of one salt, chloride of sodium, that I saw the red corpuscles transpire, I feel some hesitation in thinking that all the toxic agents which I have named cause hæmorrhage *per diapedesin*.[3]

Of late years there has been made a determined attempt to revive the old doctrine of Stahl, that the soul, or in modern language, the nervous system, is the frequent cause of hæmorrhage. The arguments in favour of this explanation of purpura have been lately urged with much force and ability by Dr. Stephen Mackenzie,[4] but I do not think that the evidence is any stronger, either from physiological experiments or from

[1] N. Uskow, Centralblatt f. d. m. W. 1878, p. 498.

[2] Du Castel, Des diverses Espèces de Purpura, Thèse de Paris pour l'Agrégation, 1883, pp. 56–58.

[3] Stroganow (Arch. f. Path. Anat. 1875, Bd. lxiii. p. 540) has described the presence of red corpuscles between the coats of the aorta and other vessels in a woman who died soon after a hard labour, but other morphological changes were not seen. He also makes the following statement, which seems strange after Dr. Wilson Fox's and Hayem's careful observations: "Wir fanden in der Literatur keinen sorgfältig, histologisch-untersuchten Fall von Werlhoff'scher Krankheit."

[4] Stephen Mackenzie, British Medical Journal, 1883, vol. ii. p. 409.

clinical observation, than when I examined the subject more than ten years ago.[1]

Setting aside the demonstration of an increase of the colourless corpuscles in the blood in some cases of purpura, there seems but little to record of any increase of knowledge of the state of the blood in this disease. The instrument for numbering the corpuscles in a cubic millimeter is a distinct help to the clinical physician; but in purpura it has only told us what we might have looked for, viz., that the red corpuscles were diminished. The chemistry of the blood, like so many other parts of physiological chemistry, is in too imperfect a state to give us at this moment any aid.

Let us turn now to the details of our case:—

Charles D., aged 18, admitted into Luke's Ward on February 3, 1883.

For the greater part of these careful clinical notes I am indebted to Mr. Oswald A. Browne, the house-physician, though in some places I have added a few observations of my own.

He is a patent-capsule-maker, and much tin is used in his trade. He says that he is a teetotaller, and lives at Holloway, where there is no illness in the same house or street. He was vaccinated when a baby, but not since.

He has been well fed, and not lacked meat or vegetable food.

There is no family history of bleedings or of purpura on the father's or mother's side.

He had rheumatic fever twelve years ago, and again in May last, when he was in University College Hospital; and for the following information as to his sojourn in this hospital I am indebted to my friend Dr. Thomas Barlow. He was in the hospital from May 23 to July 8, his illness having begun three weeks before admission. He had a presystolic and systolic murmur at apex and a systolic murmur at the base; no skin disorder was noted. His temperature varied from 99° to 100°; rarely more than this. There were enlargement of the knuckles and swelling of the elbows: the other joints were also stiff and somewhat swollen.

He has had what he calls rheumatism every winter for the last eleven years, and he was then usually laid up for six or seven weeks. In none of them did he have any spots on the body, as in the present attack. He has never had hæmoptysis or hæmaturia.

He denies syphilis, but admits having had a running; he lived and worked among loose companions.

The present illness began about a fortnight before February 1.

[1] See my Treatise on Hæmophilia, London, 1872, p. 94.

He complained of pains in both legs below the knee and pains in the shoulders. On January 28, 29, and 30, the pains were increasing, and on the 30th he was seen by Mr. Whittingham of the Holloway and North Islington Dispensary, who tells me that he found him lying in an underground back-kitchen, the front room of which was used as a laundry. On this day Mr. Whittingham says the rheumatic symptoms were not so severe, but the dyspnœa from the heart-disease was prominent. A mixture containing three grains of iodide of potassium at each dose, with solution of acetate of ammonia, nitric æther, and aromatic spirit of ammonia, was ordered to be given every four hours. No hæmorrhagic spots were seen on January 30, or on February 1, on which day he appeared somewhat relieved. But in the afternoon of this day the patient noticed several bruises on his left elbow, and these quickly spread—so quickly that his mother assured me that one could see them growing after they had come out. The same "bruises" also were seen on both arms, the back, and both hips. He said that these bruises began as small red pimples, which rapidly increased in size and took on a dark colour.

He has had no shiverings, sickness, or pain in the back.

Present State.—A lad with light hair and eyes, attention being at once drawn to the coloured patches on the face. Scattered thickly over the forehead and cheeks, not more on one side than the other, are raised indurated patches, for the most part circular, the size of a threepenny-piece, some smaller. Most of them are of a deep mulberry colour, not changed by pressure, with hardening of the skin and subcutaneous tissue for some distance beyond the margin of the coloured patches. There are some small raised patches of a rosy colour, also firm.

Both eyelids are swollen and show purple hæmorrhagic mottling under skin; the conjunctivæ are quite free from hæmorrhage though suffused. With the ophthalmoscope nothing unnatural can be made out in either eye.

Both alæ nasi are covered with mottled patches, varying in colour from a bright red to deep mulberry tint; the patches being very firm and the thickening extending into the tissues for some distance beyond the margin of the patches. Both lips are much swollen, shiny, everted, coloured in same way; the mucous membrane between the patches being softer and almost white. The gums are not swollen, but are very dark, apparently from hæmorrhage along the margin of teeth. Breath foul. Tongue swollen, slightly hardened, of a bright red colour, with slight fur on dorsum. The uvula and the mucous membrane of the palate and fauces almost black, apparently from presence of

blood underneath. Voice husky, and complains of some difficulty in swallowing.

The entire chin is considerably indurated and covered by one large patch of subcutaneous hæmorrhage, dark mulberry in colour.

Both ears are swollen, tense, shining, firm ; here and there, on both surfaces, ecchymoses.

On the front of the neck are a few small subcutaneous hæmorrhages, about the size of peas, of a brighter colour, but also raised and firm. (A water-colour drawing of face is in the Museum.)

On front of chest and belly also smaller and brighter patches circular in shape, but very discreetly scattered and not numerous.

The right arm has also raised hard dark purple patches, scattered thickly over it on the extensor surface; only here and there on the flexor surface. Many are nearly as large as a shilling-piece, for the most part circular, but some are confluent into large patches. The induration of the tissues around these patches is also here very noticeable. The smaller spots here are of a bright red colour.

On the head of the right ulna is an indurated oval patch, mottled at its centre, and for the rest bright red, the margin of induration being distinctly marked by a white line.

The metacarpo-phalangeal joints of the first three fingers are much swollen and deformed, and there are small hæmorrhagic patches like the others over the backs of the first two of them.

Nails natural. Palmar surface of both hands free.

The whole of the left arm is swollen and very tender, the extensor surface of the arm above the elbow being occupied by one large irregular-shaped patch of a deeper colour than elsewhere (and deeper in some parts than in others) everywhere raised, hard, very tender, and pitting on pressure. There are also several large patches on extensor surface of fore-arm, one large patch taking up the whole of the middle third of that surface, and extending widely over the inner surface of the fore-arm, the whole pitting on pressure and very tender.

Over the upper half of the back are several discrete smaller patches like those already described. The lower half shows a large patch, almost square, about 8 inches by 8 inches; here are some ecchymoses almost linear. The buttocks, crest of the ilia, and extensor surfaces of legs have the same kind of patches as elsewhere, but they vary more in size and colour. The soles of the feet are free. The great toes are directed outwards at an angle of 45° to the line of the metatarsal-phalangeal joints.

The penis shows a few hæmorrhages. There is nothing noticeable on glans.

He denies any sensation of itching in the skin.

Liver and spleen not palpable.

Heart: Apex beats in the fifth space in nipple-line. The area of dulness unchanged—query, a thrill perceptible at apex. Here is a prolonged murmur followed by a sound. The latter part of murmur and the impulse are synchronous. At base there is another murmur with first sound, distinct from that at apex, heard loudly over the middle of sternum and conducted up to the second right costal cartilage.

Lungs free, save a little fine crepitant râle at each base.

Blood from finger shows no increase of white corpuscles; the red show a marked tendency to form rouleaux. No bacterium seen.

Urine acid, sp. gr. 1030. A distinct trace of albumen; a cloud of mucus, but no smoky appearance.

Temperature on admission, 98°; at 2.30 P.M., 101°; at 8 P.M., 101.6°.

Feb. 4.—Last evening he was removed to an isolation ward. He has slept well, not delirious, and taken food well. Pulse small, regular, and compressible. Bowels open twice, stools natural, no blood. Looks much better and brighter. All over the body the colour of the patches is fading, and they are not so firm and raised as yesterday. The lips and ears are both less swollen and tense. The left arm swollen above and below elbow, shining, pitting on pressure, and very tender. Over the patches about both elbows distinct bullæ.

Heart as yesterday. Mr. Browne felt a very fine vibratile thrill at apex, and noted at apex a blowing murmur and a sound. The murmur probably presystolic and systolic. At base a well-marked blowing systolic murmur, heard most loudly over junction of second and third costal cartilages.

Urine shows a trace of albumen with abundance of pink urates.

Temperature at 2.30 A.M., 100.4°; at 9 A.M., 100.2°.

Evening.—Pulse very small and weak; complains of head feeling tight and of general aching.

Temperature at 8 P.M., 102.6°. Quinine to be omitted.

Feb. 5.—Has slept well during night and taken food well.

Temperature at 2 A.M., 101.4°; at 9 A.M., 100.8°. Pulse 110.

Colour in the blotches everywhere fading. Feels better. Urine still shows a trace of albumen.

The blood was examined for bacteria to-day by Dr. Vincent Harris, who has paid much attention to the detection of these organisms in the blood. His observations give a negative result, as the following report from him shows:—

"The blood was examined after being stained with a 0.1 per cent. aqueous solution of methyl-violet, dried on covering glass, and mounted in Canada balsam. The coloured corpuscles showed a marked tendency to run together, but were to all appearances otherwise normal. The colourless corpuscles were in slight excess, but presented no abnormality in structure. There was no indication of the presence of any form of bacteria in the specimens examined."

Temperature at 3 P.M., 101.8°; at 8 P.M., 101°.

Feb. 6.—The colour continues to fade, though on the neck and back are several fresh circular patches raised and indurated like those described on February 4. The arms are less swollen. He takes food well. Pulse 120, regular, and of fair volume. Urine, sp. gr. 1031, and with a trace of albumen.

Evening.—Pulse 92, regular, soft.

Temperature at 4 A.M., 100.2°; 9 A.M., 100.8°; 8 P.M., 102.2.°

Feb. 7.—The patches are almost confluent over the face, neck, and shoulders, and are of a deep mulberry colour. Elsewhere the colour is fading; now is of a light brick-red; most of the patches are very tender. Lips and ears less swollen, but the gums are now tender, and the tongue has a thick, white, moist fur.

Temperature at 8 A.M., 100.4°; 8 P.M., 100.6°.

Feb. 8.—He slept fairly. Not delirious.

Temperature at 8 A.M., 99.4°; at noon, 102.2°; at 7 P.M., 102.4°; at 10 P.M., 102.4°.

The purpura has much spread over neck and upper part of chest and back; it is of a deep mulberry colour; not so raised or so indurated as on admission. Some of the earlier patches have quite faded. Pulse 120, small and soft. He takes fluids well. Tongue thickly furred and the breath very offensive. The uvula and the right tonsil are not enlarged, and they show a light brown appearance—query, due to a slough of mucous membrane. Rest of throat reddened. Penis is clubbed from a large hæmorrhage into foreskin covering glans. The skin here looks ready to slough.

The ophthalmoscope to-day detects nothing abnormal.

Feb. 9.—Purpura again spreading. He still sleeps and takes food well. Large bullæ over the left arm.

Temperature at 8 A.M., 101.6°; 1.30 P.M., 101°; 8 P.M., 102°.

Feb. 10.—Restless night; talking much, but appeared rational when spoken to by nurse.

Temperature at 8 A.M., 100.8°.

Over lower part of both lungs a good deal of râle. Uvula distinctly sloughing; the left side of palate also white. Tongue

thickly furred and breath very offensive. Further fresh patches of purpura, so that back is almost covered by them. Pulse 120, soft and compressible. Urine 1034, and with a well-marked trace of albumen.

In the afternoon the breathing became more rapid; respiration 60. He spat up bloody-coloured sputa. His mental state was clouded. The râles in the chest were now audible over a larger extent of surface, and were looser in character. He died at 9.30 P.M.

Examination thirty-seven hours after death, 10.30 A.M., *Feb.* 12, 1883.—Rigor mortis well marked; the body thickly set with purpuric spots; the patches are confluent over the chest; the penis is clubbed from hæmorrhage into the foreskin.

On dividing the scalp, symmetrical hæmorrhages are seen between periosteum and skin over each ear and eye.

The calvaria is natural; the meninges, vessels, sinuses, and the substance of brain are quite natural. No hæmorrhages are seen anywhere within the head.

The mucous membrane of the lips and gums has sloughed at the spots where the hæmorrhages were seen during life. The velum is much thickened; the forepart of the uvula is covered with a thick brown slough, which cannot be torn off or detached by washing; the right tonsil is much enlarged and sloughing; the left is natural. The back of the uvula still shows hæmorrhage, and the back of velum shows a slough the size of a shilling. The gullet is natural; shows no hæmorrhages. The epiglottis shows a hæmorrhage at its tip and below; the rest of the larynx and trachea is natural. The glandulæ concatenatæ are much enlarged.

On opening the chest, there is seen to be a considerable excess of fluid in both pleuræ, which are studded with ecchymoses; a few old adhesions on the right side at back; there are more on left side, into one of which a hæmorrhage has taken place.

The pericardium is universally adherent by old adhesions. There is a calcareous patch over the left auricle. The right auricle is much dilated. There is no clot in the auricular appendix. The tricuspid orifice is not contracted; but the valves show a milk-white appearance, and there is a small hæmorrhage into the texture of the valves. The two anterior flaps are joined together, and there is a fringe of small granulations around the valve a little above the insertion of the chordæ tendineæ. There are numerous small ecchymoses in the endocardium of the conus arteriosus. The pulmonary valves are natural. The left auricle is much dilated. There is no clot in the auricular appendix. The mitral orifice grasps tip of middle finger, and a

row of small granulations can be seen from above. On opening the ventricle from below, the usual funnel-shaped appearance of mitral constriction is seen, and the chordæ tendineæ are thickened and opaque. Fine ecchymoses are seen over the endocardium. The aortic valves are much deformed, joined together, and a crown of granulations surrounds their ventricular surface. There is some hypertrophy and dilatation of the left ventricle, but the muscular tissue is of a brownish pale colour. The weight of heart is 575 grammes. Before opening the heart, water poured into the aorta slowly ran through into the ventricle.

The bronchial tubes contain bloody mucus. The large pulmonary arteries are free. The upper lobe of the right lung is solid, sinking in water, red, highly granular on section. The lower lobe shows same appearances, but its colour is more purple, and distinctly suggests hæmorrhage. The same appearances are seen in the lower lobe of the left lung, but with grey-coloured, granular, irregular-shaped masses about the size of peas inserted in the purple tissue. The upper lobe of left lung is œdematous.

There are hæmorrhages into the peritonæum covering the small intestines and the recti muscles.

The spleen is large, firm, natural in pulp and follicles, weighing 250 grammes.

The small intestines are natural on their mucous surface. The large intestines show four ulcers. The largest is just below the rim of the ileo-cæcal valve, causing this to be swollen. It is irregular in shape, but could be covered by half-a-crown. A large slough is still adherent. There is no hæmorrhage around. In the ascending and transverse colon are three ulcers the size of sixpenny-pieces, but slightly oval, surrounded by hæmorrhage, and the sloughs are still adherent.

In the stomach there are some few ecchymoses in great cul-de-sac. The pancreas and duodenum are natural.

The liver is natural in size. On section it shows a distinct nutmeg appearance. The tissue is not increased in firmness. The gall-bladder is collapsed; there is a very little yellow bile in it.

The kidneys show a slight amount of cloudy swelling; weight, 400 grammes together. There are no hæmorrhages in the pelvis.

Aorta natural—query, slight atheroma.

The two elbows, knees, and ankle-joints opened. No hæmorrhages found. An increased quantity of a yellow synovia in left ankle, with shreds of fibrine.

Small portions of the mucous membrane of the lips and gums, of skin over the pectoral muscles and abdominal recti, and of the kidney, were hardened in chromic acid and spirit, and sections

examined in the month of March. Attention was of course specially directed to the vessels, but I could find no changes either in the mucous membrane or in the skin, though portions of the skin were the seat of abundant hæmorrhage. They were not examined for amyloid reaction until the month of November, when Dr. Vincent Harris very kindly undertook to take them out of the Canada balsam and test them for amyloid disease. He writes to me: "On examination of the specimens, my opinion is, that they are not amyloid. I am not able to find any abnormality in the blood-vessels. I fancy the larger vessels of the kidney are rather too well supplied with muscle, but it may be only fancy; at any rate, there is no gross change."

When the lad was brought by his friends to St. Bartholomew's Hospital, I felt that the question of some acute specific hæmorrhagic affection was one which had to be discussed. He had fever and pains in the joints, together with abundant purpura. It was Saturday, and the mother then told us that the purpura had appeared on the Wednesday. The condition of the patient, still fair on the fourth day of the disease, made us think that the purpura could hardly be due to a hæmorrhagic form of small-pox or other fever. Then was it some form of a toxic purpura? He worked in tin and other metals, and two days before the appearance of the purpura, a mixture containing three grains of iodide of potassium for a dose had been given every four hours. But I doubt if the iodide rash be ever so severe or so general as in this case. It is petechial, and more limited to the lower limbs. Then as to the morphological elements of the blood, neither I myself nor the skill of Dr. Vincent Harris could detect during life any marked increase of the white corpuscles, or any signs of the presence of bacteria. Nor could bacteria be found after death in the purpuric tissues. So that at least in one case of fatal purpura the *Monas hæmorrhagicum* of Ceci has not been found, even though carefully looked for. The liver and spleen could not be felt, but there was evidence of disease of the mitral orifice; and there was proved, by the examination after death, to be great deformity of the aortic valves with stenosis of the mitral orifice and disease of the tricuspid orifice, illustrating a conclusion which may I think be drawn from Dr. Bedford Fenwick's paper,[1] that disease of the tricuspid (when it is seen) often accompanies mitral disease. Was then the purpura due to the cardiac disease congestive in its origin, or due to numerous emboli? Against the origin of the purpura in embolism is the fact that the spleen and the kidneys were free from

[1] Bedford Fenwick, Transactions of the Pathological Society of London, 1882, vol. xxxiii. p. 64.

infarctions. Had these large spots of purpura been due to embolism, the emboli must have been tolerably large—large enough for their fellows to have caused effects visible to the naked eye in the spleen or the kidney, which could hardly have escaped in so general a diffusion. In fact, there was no appearance of embolism found in the body, if we except the patches of purpura.

Was the disease scurvy? During life this was an opinion held by some, and they pointed to the state of the gums as proof. But it must be owned that swollen and bleeding gums are not uncommon in cases of hæmorrhagic diathesis in which imperfect diet cannot be traced, and in which other recognised causes are present. This lad, we were told, had had a due supply of fresh vegetables and flesh-meat.

Finally, were there present any of the other causes of purpura spoken of at the beginning of the paper? I could not find certain evidence either before or after death of such constitutional states as hæmophilia, syphilis, leucæmia, Bright's disease, jaundice, phthisis, and the like. But there was a marked history of rheumatism—rheumatism which had begun when he was only six years old, and had returned every winter, and from an acute attack of which he had suffered only the May before his death. Further, the purpuric patches were for the most part raised, hard and tender, calling to mind at once patches of erythema nodosum; and they took up a like place on the extensor surfaces, what may be called the psoriasis position, leaving the palms and soles free. The patches were also free from itching, in this way showing another point of resemblance to the purpura urticans or erythema hæmorrhagicum of our own day; they faded and became less raised with a degree of quickness not often seen in ordinary purpura.

I incline therefore to the opinion, that the case which is now printed is one of rheumatic fever accompanied by purpura, to which the name of rheumatic purpura may very well be given. I do not see how a line can be drawn between a case like this and those which Schönlein described under the name of peliosis rheumatica.

The word peliosis is used by Hippocrates,[1] and is apparently derived from πελιός, discoloured by extravasated blood. The same spirit, which now tempts every good dermatologist to change all his names for diseases about every five years, moved Schönlein, fifty years ago, to substitute peliosis for purpura. He speaks of peliosis Werlhofii,[2] peliosis senilis, and the like.

[1] Hippocrates, De Fractis, 11 (of Calcaneum), Littré's ed. t. iii. p. 456.

[2] Schönlein, Allgem. und spec. Pathologie und Therapie, Freiburg, 1837, Bd. ii. p. 45.

In the same chapter he also spoke of a peliosis rheumatica, the description of which I will give in his own words: "The patches never run together, as they often do in morbus maculosus Werlhofii; the patients have either suffered before from rheumatism; or rheumatic symptoms appear at the same time; pains in the joints, which are swollen and painful on movement. The patches peculiar to the disease appear in the majority of the cases first in the limbs, especially on the lower, and here only below the knee. The spots are small, the size of a lentil (*Linse*) or a millet-seed, bright red, not raised, disappearing on pressure with the finger, becoming later on dirty brown yellow. The eruption appears in crops, and often lasts through many weeks. Slight changes of temperature will bring out fresh patches. The disease appears with fever which has a remittent type."

It will be seen that the case now printed agrees with Schönlein's description of peliosis rheumatica in all but the physical appearances of the patches. They were not small, but in many places confluent; they were raised above the skin, and firm, and they did not disappear on pressure; but are these differences enough in themselves to create a new species and to separate the case from those described by Schönlein? I think not, though I have known some Germans refuse the name of peliosis rheumatica to a generally diffused purpura in rheumatic fever, the size of the patches of which certainly exceeded a millet-seed, being as big as a sixpence. But to avoid using a new name, in itself not one whit better than purpura, I prefer to call the disorder rheumatic purpura.

Since the discovery that effusion of blood into the joints was the chief cause of the "rheumatism" in hæmophilia, and Scheby-Buch's observations on the presence of joint affections in purpura,[1] it may be asked: are hæmorrhages into the joints in cases of rheumatic purpura the cause of the rheumatic symptoms? This case does not give any affirmative answer to that question. The joints examined after death showed the appearances of ordinary rheumatic fever, but no hæmorrhages into their cavities. There had been many attacks of rheumatism before the hæmorrhage into the skin was noticed: indeed the friends denied any similar hæmorrhagic disease before the attack of which the patient died.

It may be noted that four ulcers of the colon were found. Ulceration of the intestines appears to be by no means rare in purpura. Max Zimmermann has recorded a case in which he found no less than 150 ulcers in the ileum, and the process of

[1] Scheby-Buch, Deutsches Archiv. f. klin. Med., 1874, Bd. xiv. p. 466.

inflammation had extended to the peritonæum.[1] Henoch has also spoken of colic in cases of purpura.[2] Are the ulcers merely the result of extravasation of blood under the mucous membrane, which then sloughs, and the slough is eaten off by the *succus entericus?* A process like this could be actually seen going on during life in parts exposed to view. For example, there was apparently a simple extravasation of blood under the healthy mucous membrane of the gums and uvula on the day of admission; before death the mucous membrane had sloughed, and it only needed time for large ulcers to form, and be like those in the intestine.

[1] Max Zimmermann, Arch. der Heilkunde, 1874, Jahrg. xv. p. 170.
[2] Henoch, Berlin. klin. Woch. 1868, p. 517, and 1874, p. 641.

CASES OF CONGENITAL PEMPHIGUS PERSISTENT FROM BIRTH.

BY

J. WICKHAM LEGG, M.D.

I am induced to publish these cases of congenital pemphigus in a brother and sister on account of the rarity of the persistence of the disorder in children. It was formerly the accepted teaching that congenital pemphigus was of syphilitic origin, and that it quickly ended either in the recovery of the patient or in his death. In the cases now published, evidence as to syphilis is negative, and the children are yet alive, still suffering from the disease at time of writing (November 1883), the boy being nine years of age and the girl eighteen months.

The children were first brought to me at St. Bartholomew's on June 28, 1882. The mother was then thirty-two years old, married when twenty-three, a feeble woman, worn out by repeated sucklings.

I. The eldest, Edward John, the subject of pemphigus, was born exactly twelve months after marriage, at full time.

II. Child, boy, alive, aged six. Never any breakings out on body.

III. Child, boy, alive, aged four. He has excellent health, no breakings out.

IV. Child, boy, alive, aged two. He has had no skin-disease and is in good health.

V. Child, girl, aged six months. She has pemphigus on the hands and feet.

The mother of these children has a nephew, a sister's son. Of this boy she says that he had at birth a breaking out like her own son, and that it continued until puberty, when the eruption ceased. He is now eighteen years of age.

The mother never had any miscarriage nor a dead child.

When she was seventeen she had a skin-disease on her loins, which lasted about two months; she had small places which ran. She has no pains in her skin at night, no enlarged glands in neck, and nothing can be seen in tongue or throat, although she complains that she very often has sore throats, which last a week each time. (Since the date of these notes I have often looked down the patient's throat, but seen nothing.) No more evidence of syphilis can be detected. Of her father's and brothers' history she knows nothing.

The husband I have not seen; he is said to be in good health, but suffers now and then from "asthma," *i.e.*, shortness of breath and cough. He has no sore throat and no breaking out on the skin.

She says the eldest boy had snuffles for the first two years of life. He has now numerous blebs over his hands and feet, chiefly on the extensor surfaces and over joints. There are marks of old blebs on the palms. He has no nail on the right thumb; the mother says he did not have a nail when born, only a small blister. He has a deformed nail on the left thumb. The other finger-nails are tolerably well made. Several of the blebs contain blood, and the mother prefers blood to come rather than serum, as the serous fluid leaves a wound, whilst the blood dries up. The blebs come anywhere when he is knocked.

In order that the patient might be carefully watched, I admitted him in January 1883 into Luke's Ward. For the following notes I am indebted to Mr. Owen Lankester, the clinical clerk who had charge of the case.

History.—At time of birth he was seen to have an eruption of the skin, which has continued, and been much worse than it now is. For this he has attended at various London hospitals as an out-patient, but treatment has availed nothing. For eight months he has been attending here as an out-patient under Dr. Legg. He had no snuffles when an infant; he has no Hutchinson teeth, nor signs of disease of the eye. Nothing leading to a suspicion of hereditary syphilis can be made out.

Present State.—Jan. 19.—He is a bright, intelligent, healthy-looking boy. No scars or eruption on head or face, save one small rough patch at left angle of mouth.

The front of the belly and chest is scattered over with numerous scars. The back shows some few scars and two reddened patches, one over the spine of the sixth, and the other over the spines of the ninth and tenth dorsal vertebræ. Both arms proper are free from eruption. Both olecrana are covered with scaly red patches. On the right fore-arm a few scaly patches may be seen, and there is a rupia-like patch on the middle of

the extensor surface of left fore-arm, and also on the front of the right wrist. The palmar surface of both hands is covered with small dark-coloured scabs, reminding one of the burrows formed by the acarus scabiei. The dorsal surface of both hands, especially that of the knuckles and fingers, is covered with a scaly red rash, with here and there scab-like patches. The nails are ribbed transversely; the nail of the right thumb is absent; of left, broken and ribbed.

Both thighs free; skin of right leg has a scaly red eruption; a large scale just below tuberosity of the tibia; a black scab outside right knee; skin over right foot shrivelled. The left leg has here and there scabby patches. The places do not itch. His mother says that the arms above elbows and thighs above knees are never affected.

Heart and lungs natural. Urine, sp. gr. 1020, acid, no albumen. Temperature, 98°.

Jan. 22.—There is a bleb filled with a blood-coloured fluid, about the size of a fourpenny-piece, on outer side of palmar surface of right wrist.

Jan. 23.—This morning there is another large bulla full of a serous fluid on the inner side of right knee. The bleb that was filled with bloody fluid is shrivelling.

Jan. 26.—The bulla on the right knee has gone down, leaving a shrivelled scab, after increasing somewhat in size. There is a blood bleb in front of the right knee about the size of a threepenny-piece; a larger one below on the ankle, and a serous bulla on the inside of the right ankle.

A serous bulla, size of a sixpence, on the left elbow.

Jan. 29.—The bullæ are shrivelling up everywhere; one on the front of the right leg has become purulent; there is a small new blood bleb on the middle of the right shin.

Jan. 31.—A serous bulla on the inside of the right ankle.

Feb. 5.—A small serous bulla on the extensor surface of middle finger of the right hand.

Urine 1012 cc. in twenty-four hours; urea, .8 per cent.

Feb. 7.—Urine 1359 cc. in twenty-four hours; urea, .9 per cent.

Feb. 8.—Urine 1140 cc. in twenty-four hours; urea, .75 per cent.

Feb. 9.—Urine 655 cc. in twenty-four hours; urea, .95 per cent. (A good deal lost.)

Feb. 9.—State as discharged. Face and head clear. Some scars still on front of chest and belly. Two small black scabs, one on ensiform cartilage, the other just below the right nipple.

Scars and red patches still present on the back. Two smaller patches have appeared over fourth and fifth dorsal spines.

The arms proper still free; olecrana as before. One scaly

patch on extensor surface of right fore-arm; many like patches round wrist. Left fore-arm shows scaly patches here and there; the rupia-like patch is gone. Hands, knuckles, and fingers as on admission. The right thumb-nail has skinned over. The thighs are still free. The right shin shows a ground-work of redness covered with scaly patches; two purulent patches are seen, one under the tibial tuberosity, the other lower down; these are obsolescent bullæ. There is a rupia-like patch on inner side of right knee. The skin over the right foot is still shrivelled. Left shin and leg almost clear, only one or two scaly patches to be seen.

On admission, the boy's temperature was 98°. Next morning, January 20, it was 98.6°, but in the evening it rose to 99.8°; on the following day it was 99°, both morning and evening; but the morning and evening temperature thence up to January 24, and from February 1st to the 6th, never rose above 98.6°.

The boy was made an out-patient, and has continued to attend St. Bartholomew's, but without much change in the state of skin. His general health seems good, but at every visit bullæ of different sizes and in different stages are seen on the hands and feet and trunk. The following notes were taken on November 2, 1883:—

Arms and fore-arms pretty free from disease, save the olecrana, which are covered with scaly red patches; one elbow showing a large bulla about the size of a walnut. Front of wrists shows red scaly patches, and the palms of the hands show numerous small depressions, as if the epidermis had been cut out, leaving a ragged edge. The dorsal surface of both hands red and scaly, the back of the fingers very red and raised, with the natural lines much exaggerated. The mother asserts that the skin of the trunk is pigmented as well as scarred. The thighs seem free, but the right shin, from the knee to the foot, is covered with a red scaly eruption diversified by bullæ containing either blood or serum. Same appearance over knee. Backs of legs free, Front of left knee shows ribbed patches with remains of bullæ; skin over left shin fairly natural, only four or five red scaly patches being seen. Over left ankle-joint a large recent serous bulla. The mother says both ankles and insteps suffer much from blebs. Skin of both soles fairly natural; the dorsal surface of toes show raised red and ribbed patches. Both great toe-nails deformed; other nails tolerably natural.

Of the girl, the mother said that the nurse noticed a place near the left thumb-nail at the time of birth, and that all her life blebs have been seen upon the hands and feet, knees and elbows, and wherever the child knocks herself. During her attendance at the hospital, several such bullæ on the thighs and head were pointed out as being caused by blows, besides

those on the hands and feet, which appeared to arise spontaneously. Beyond the skin-disease, there appears nothing seriously amiss with the child. She is not rickety, and has cut the incisor teeth naturally. The mother says she suffers a good deal of pain from the bullæ.

The following notes were taken on November 2, 1883. The skin of the arms and fore-arms fairly natural, save over the olecrana, where there are slightly raised reddish spots of the size of peas. On front of both wrists reddened smooth places, probably remains of bullæ. On palmar surface of left hand there is an oval broken bulla, 15 by 8 mm. at base of little and ring fingers; remains of bullæ at base of little and index fingers. On the extensor surface of thumbs and fingers are reddened patches and some small bullæ unbroken, some containing blood, others dried up. The left thumb-nail loose. On the front of the left shoulder is a red nævus. On the forehead is a bulla, and on scalp are two dried-up scabs, size of peas, the remains of bullæ said to be caused by a blow. Skin of trunk free from disease; so also thighs; below knees begin red irregular spots, some showing bullæ; same on extensor surface of toes; none on soles. Mother says that bullæ form very readily on the ankles and the dorsum of foot, but never on the soles.

It will be noted that in the foregoing account there are a few inconsistencies in the story as given to us at the hospital. I think it is better to leave the notes as they were taken down without any attempt to make them run all together, because the variations might well be explained by failure of memory rather than by any wilful attempt of the mother to deceive. The reader may thus be able better to judge of the credibility of the whole account.

First of all, as to the evidence of syphilis: I could not examine the father, but I saw the mother, and neither from the account which she gave me, nor from my personal examination, could I make out any trustworthy sign of syphilis. Nor in the children could any definite mark of syphilis be found. In the eldest boy there was nothing of syphilis in the eyes or teeth. I also examined the third child, and could find out nothing in him; and the same holds good of the daughter. So that, as far as it goes, the evidence of syphilis is nought.

It may be noted that the mother's sister's son is said to have suffered from the same disease. This will point to an origin farther back than the mother and father, probably to the maternal grandfather or grandmother. Of these nothing is known; it would seem that this disease descended (in the same way as hæmophilia, Duchenne's hypertrophous paralysis, diabetes insi-

pidus, colour blindness, and other diseases) through the mother, not immediately through the father, in the manner that I pointed out two years ago in these Reports.[1]

Has this physiological rule of descent through the mother rather than through the father been recognised by the vulgar before it was noticed by men with special knowledge? To be "own sister's son" is spoken of as close kindred; and it may be often noticed that a man feels much greater tenderness for the children of his sister than for those of his brother. Evidence also might be brought forward from the marriage customs of savages, or even of civilised people, such as the ancient Egyptians, but this topic cannot be entered upon now.

The brunt of the disease in both of the children appears to have fallen upon the extensor surface of the hands and elbows, of the feet and legs, slightly upon the palms and front of the wrist, and but little on the skin above the elbows or knees, such bullæ as formed above these joints being set down to blows or other outside causes.

I have already expressed my opinion that this persistent congenital pemphigus is a rare disease. I can find no account of such cases in the large works on skin-diseases which have appeared within the last twenty years, nor can I find any similar case in the casuistry of pemphigus as recorded in the year-books. I have spoken with many friends of far greater experience in skin-diseases than I have, and they can tell me of no like cases in their knowledge. I have seen nothing like them in my own experience, so that the observation of these two children may not be without interest to some.

As to treatment I have little satisfactory to record. Grey powder in doses of half a grain to one grain was given twice a day, Fowler's solution from one and a half to two drops three times a day, antimonial wine, cod-liver oil and steel wine, and maltine, were administered without any effect being perceptible. I sent the boy to the All Saints' Convalescent Hospital at Eastbourne during the month of June, and the mother thinks he gained great good from the sea-air and salt water. He certainly, as might be looked for, appeared in better general health on his return.

[1] St. Bartholomew's Hospital Reports, 1881, vol. xvii. p. 305.

CASES FROM MR. WILLETT'S WARDS.

BY

ERNEST COLVILLE.

I.

A Case of Ruptured Liver with Unusual Symptoms.

The following are the notes of a case of some interest:—

William B., aged 32, was brought to the hospital at about six P.M. on January 17th. He had been picked up by a passer-by, and stated that he had fallen off the tail-board of a van while it was in motion. The patient was in a state of extreme collapse, with a pale anxious countenance, a small, feeble pulse, cold extremities; complained of great pain in the epigastric region, and when placed on the couch, lay huddled up on his left side; shortly after he went, with the help of the porter, to the closet, where he passed a motion.

After two hours' watching, he was admitted to Pitcairn Ward, was put to bed with hot-water bottles, and ordered ℥xx. of the liquid extract of opium, ℥x. to be repeated every four hours.

Very soon after his admission he began to vomit almost incessantly: the vomit was colourless and frothy; later still he began to express a desire to defæcate. Four hours after his admission he began to come out of his extreme collapse; the extremities became warmer and his pulse improved, but the vomiting continued.

Jan. 18, A.M.—Passed a restless night; constant sickness and intense desire to defæcate, but is unable. Has passed urine; specific gravity, 1024. A trace of albumen; no blood. Opium continued. Temperature, 99.6°.

P.M.—Lies on his back groaning, restless, obviously in great pain; anæmic, but not extremely so. Abdomen very hard and tender; motionless in respiration; too tender for careful examination. Vomiting continues; vomit tinged with bile.

Mr. Willett, in consultation with one or two other members of the surgical staff, thought that the patient might have sustained a rupture of the small intestine, or be suffering from an acute internal strangulation, and so raised the question of abdominal section; but it was decided to wait another day.

4.30 P.M.—Vomiting every quarter of an hour; countenance very anxious; given morphia, gr. $\frac{1}{4}$, hypodermically.

7 P.M.—Vomited only three times since 4.30; pulse, 120, fairly good; poultice ordered to abdomen to relieve pain.

12 P.M.—Morphia, gr. $\frac{1}{3}$. Vomiting again increased; pulse, 110. Temperature, 98.4°. Belly very tense.

Jan. 19, 5.30 A.M.—Slept at intervals; morphia, gr. $\frac{1}{4}$; pulse, 116, weaker.

11 A.M.—Still constantly sick and very thirsty; temperature, 99.8°; pulse, 116, weaker. Morphia, gr. $\frac{1}{6}$.

3.30 P.M.—Condition not materially altered since yesterday; lies on his left side with his knees drawn up, and says he is easier. Has had short sleeps, but still constantly sick; has passed nothing, although he has a pressing desire to evacuate the bowel. Condition of abdomen unchanged. Face pallid; expression pinched and anxious; skin sallow.

Another consultation was held, and it was decided, as the patient was getting decidedly worse, to open the abdominal cavity.

He was taken to the theatre, and being put under the influence of chloroform, Mr. Willett commenced by a median incision, three inches in length from the umbilicus downwards. On opening the peritoneal cavity, it was found to be full of dark brown fluid blood, of which several pints escaped. On introducing the finger nothing definite could be felt, so the incision was enlarged an inch upwards; but it being impossible to make out anything further, the wound was brought together with silk sutures, a glass drainage tube being inserted between two of them; a sponge was placed over the wound, and the abdomen packed with carbolised tow, to be changed as often as necessary.

On coming round from the anæsthetic, the patient was very restless until morphia, gr. $\frac{1}{4}$, was injected.

8 P.M.—Has slept off and on since operation; pulse, 106. Temperature, 99°. Respirations, 17, perfectly rational.

12 P.M.—Has slept for half an hour or more; skin moist; lies on left side, and is decidedly easier since the operation. Sickness same; very thirsty. Pulse 120, regular and soft. Dressings have been changed three times, sponge being soaked each time.

Abdomen less tense and not very tender. Has had two enemata of starch and opium, ℥xx.; pupils well contracted.

Jan. 20, 2 A.M.—Restless at intervals; still sick. Temperature, 101.4°.

3.15 A.M.—Has taken small quantities of milk and soda-water without vomiting. Slept from 2.45 to 3.15. Pulse 118. Temperature, 99.6°. Dressed.

4 A.M.—Enema repeated with beef-tea and essence.

7.30 A.M.—Condition same. Temperature, 101.4°.

9.45 A.M.—Quiet and feels easier; very thirsty; sick as before. Pulse much more feeble, 120. Respirations, 32; thoracic, shallow, and sudden. Enema repeated. Slightly jaundiced.

11.30 A.M.—Passed flatus by rectum. Temperature, 102°.

4 P.M.—Extremities cold and clammy. Pulse 120°, regular, very thin. Temperature, 101.6°.

Became gradually worse; ceased to retain the enemata, and died at twelve P.M.

Post-mortem.—A small quantity of blood in peritoneal cavity; intestines loosely adherent; those in the right hypochondrium deeply bile-stained; omentum firmly adherent over a space of 2 inches by one-half along front surface of liver.

Liver removed showed extensive transverse rent in the right border 2 inches long by $2\frac{1}{2}$ in depth. On section the right lobe very blanched, but not the left. Liver not soft and not apparently fatty.

No other lesion of any viscus; no fracture of any rib.

Apices of both lungs adherent; deposit of old dried-up tubercle.

Kidneys not quite sound; contracted, and structure of cortex and pyramids not distinct.

The chief interest in this case is to be found in the resemblance of the symptoms to those of rupture of some portion of the intestine rather than of the liver, or to an acute internal strangulation.

The pain from the first being chiefly referred to the epigastric and umbilical regions, instead of over the situation of the liver, the intense and incessant vomiting so soon after the injury, the constant and fruitless efforts to evacuate the lower bowel, the anxious and pinched expression, all pointed to some acute affection of the small intestine, probably high up. While against the diagnosis of ruptured liver were the small height of the fall, the decubitus, which was markedly on the left side, and the temperature, which had regained the normal height within a few hours, and even rose above it—a remarkable occurrence after a severe hæmorrhage.

The shock could be accounted for either by this or some

extravasation of the contents of the bowel; but from the first anything like a thorough examination of the abdomen was impossible owing to its extreme tenderness and the restlessness of the patient.

Seeing that the patient was rapidly getting worse, an operation was without doubt indicated, as giving him a last chance, although the result would be uncertain. As matters turned out, although the patient's life was not saved, his end was rendered comparatively calm.

The persistent vomiting and tenesmus must have been caused first by the pressure of the extravasated blood in the stomach and intestines, afterwards by peritonitis.

A rupture in the right border of the liver is rare, especially as none of the adjacent ribs were broken. It was probably due to the fact that the man fell with his arm under him against the side of the chest, and so the force was greater at that particular part.

A drawing of the liver is preserved in the Hospital Museum, Series lvii., No. 283c.

This case, when compared with a case of ruptured liver and kidney which also occurred under Mr. Willett, and was reported by Mr. Jessop in vol. xvii. of the Hospital Reports, shows a marked difference. In the latter, the fall was from a height of 25 feet in a lift, and although the kidney was ruptured as well as the liver, the collapse was not so well marked, nor the after symptoms so severe: vomiting only occurring occasionally, the abdominal pain and spasm soon passing off, the patient lying quite quiet in bed, only complaining of tenderness on pressure; the decubitus being markedly on the right side, and there being no tenesmus. The man lived for ten days, death resulting from secondary hæmorrhage and general peritonitis, which did not occur before that time.

II.

Three Cases of Knee-Joint Affection, one of Chronic Synovitis and two of Loose Cartilage, in each of which the Knee-Joint was directly Incised (Antiseptics).

Case I.—*A Case of Drainage of the Knee-Joint for Chronic Effusion—Recovery with a Moveable Joint.*

Henry H., aged 40, stone-mason, was admitted to Pitcairn Ward on August 30, 1882. First noticed two years previously that his right knee was stiff at times, and that this passed off after

moderate exercise. He was subject to rheumatism. Five months before admission the same knee became much swollen after some extra work; with rest this disappeared, and his leg was put in a plaster of Paris case; but on its removal the swelling returned.

On admission there was considerable passive effusion into the right knee-joint, which measured 13¾ inches in circumference just above the patella, being an inch larger than on the opposite side. The outline of a much thickened synovial membrane could be felt all round. There was severe aching pain, especially at night, which prevented him from sleeping, with increased heat and much pain on movement. Pressure, blisterings with dressings, and weights, were all well tried during September and October without effect, the patient suffering from severe pain in the joint, preventing the use of his leg, with occasional rheumatic pains in other joints. Seeing that the joint-disease was drifting into a hopeless condition, a consultation was held, at which the balance of opinion being in favour of operative interference, Mr. Willett decided to lay open and drain the joint, and on November 8 proceeded as follows:—

The patient being under æther, and all antiseptic precautions being taken, an incision 2½ inches long was made from the centre of the outer border of the patella directly upwards into the joint. A considerable quantity of turbid fluid, of the consistency of serum, and containing large flakes of lymph, escaped. A second incision was made downwards for the same distance from the centre of the inner border of the patella, and a third incision of the same length at the outer and back part of the knee, from the level of head of the fibula upwards, parallel to the inner border of the tendon of the biceps. The joint was washed out with carbolic lotion, the synovial membrane well scraped, and afterwards swabbed out with a solution of chloride of zinc (gr. x. ad ℥i.); a drainage tube was passed between the first and second openings, and a bundle of horse-hair, previously soaked in carbolic lotion, between the second and third. The limb was put up in a straight back-splint and a long Liston's splint. Pain gradually diminished after the operation, there being only occasional startings of the limb. The temperature, taken at 8 P.M. on the day of the operation, was 98.2°; at the same hour on the five following days it was 100.6°, 101.2°, 101.2°, 102.2°, 101.2°, and after the sixth day from the operation was natural. By December 12 all drainage tubes were removed; by the 19th, the wounds were only superficial, and he could lift his leg off the bed without pain.

On January 12 he could flex the knee through about ten degrees without pain. Measurement, twelve and a half inches

above patella. A month later the limb was put in plaster of Paris, and the patient got up.

March 5.—Plaster removed. No fluid in joint. Some thickening of synovial membrane. Can flex the knee to angle of thirty degrees, and can walk with the aid of crutches.

On January 12 effusion took place into the left knee-joint, of which he had been complaining for a day or two. This effusion disappeared after a blister, only to reappear again.

On March 6 the left knee was fired, eighteen burns being made into the subcutaneous tissue over the situation of the synovial membrane, each being about an inch long. The wounds healed well, with gradual disappearance of the fluid from the joint.

June 17.—Could walk with crutches, and without pain, the right knee being the stronger. Discharged.

Case II.—*Loose Cartilage.*

William W., aged 58, admitted October 13, 1882.

The previous November had an injury to his left knee, which laid him up for two months. Two months before admission he first noticed something moveable in the left knee, which was painful, and caused him to fall twice.

On admission, there was slight fulness of the left knee-joint, but no heat or fluid in the joint. A lump the size of half a walnut could be felt at the outer side of the patella, which was freely moveable over a limited area.

Oct. 18.—Under æther, and with antiseptic precautions, Mr. Willett having transfixed the cartilage with a long needle, made an incision one and a half inch long over it directly into the joint. The cartilage, which was attached by its base to the outer side of the synovial membrane, was easily removed. No sutures were used, and no drainage tube. The cartilage was an inch long by three-quarter inch broad, cartilaginous in section and somewhat calcareous on the outer side. There was some hæmorrhage immediately after the patient returned to the ward, owing to which the wound had to be redressed after securing a small vessel. The leg was put in a straight back-splint and a long Liston side-splint.

On the 31st knee dressed; wound healed by first intention. No effusion into the joint.

Nov. 10.—The leg was taken off the splint. Some effusion then took place into the joint, so the splint was reapplied for a day or two.

On November 18, all effusion having disappeared, the leg was put into a plaster of Paris case. Discharged.

The day after the operation the patient's temperature was 99.2°. After this it was never above normal.

On December 28, the patient was readmitted to have plaster case removed. There was again some effusion into the joint, which disappeared with Scott's dressings. Discharged February 9, saying his knee felt strong.

Case III.—*Loose Cartilage.*

Emily M., aged 31, admitted September 27, 1882.

Has had five attacks of rheumatic fever, the last five years ago.

For nine months before admission has been troubled with pain in the left knee, with occasional swellings, the leg giving way at times with a sudden sharp pain. Above the upper and inner border of the patella a hard and flattened body about an inch in diameter was to be felt.

Some effusion into the joint. The body is only slightly displaceable, and is very tender.

Oct. 18.—The patient being under æther, and with antiseptic precautions, Mr. Willett, having fixed the body with a needle, cut directly down on it, and removed it.

It was attached by its base directly to the synovial membrane, from which it had to be "shelled out." A drainage tube was inserted, and the joint washed out with 1 in 80 carbolic lotion.

No sutures were employed.

The leg was placed in a back-splint and a long interrupted Liston's side-splint, as in the previous case. First dressing on October 22, when the wound was superficial; quite healed on November 10; leg put in plaster of Paris on November 17. There was no rise of temperature at any time. Discharged.

On January 11 she was readmitted on account of effusion into the joint, which subsided with rest and a Martin's bandage. She was finally discharged on February 17, when she could walk with the aid of crutches.

These cases add three more to the number of those which show that large joints may be opened with impunity under proper antiseptic precautions.

In the first case there was some disturbance of the normal temperature during the first week, but after that it kept steadily to normal; the improvement as regards pain was uninterrupted, and consequently the general condition of the patient improved in proportion as his sleep at nights was less disturbed.

When last heard off in November 1883, although he was more or less crippled from general rheumatoid arthritis implicating his other joints, and rendering them all stiffer than natural, yet the knee-joint that was drained seemed to remain his most useful one.

The second case, William W., who was seen last in the same month, has a perfectly useful limb, on which he walks without difficulty, although he is suffering from rheumatoid arthritis in his right hip-joint.

The third patient has a natural limb and useful movement, although she occasionally attends complaining of pain, due to the fact that she is a woman of a highly sensitive temperament.

ON THE

PERCUSSION OF THE LUNGS AND CHEST.[1]

BY

J. F. BULLAR, M.B.

There is no generally received theory of percussion, and statements are made on this subject in the recognised text-books of medicine which are contradicted by the results of experiment.

The present paper is an attempt to settle, experimentally, some of the undecided points in the theory of percussion, and to give a true explanation of some of the well-recognised signs of disease.

It may be said that a correct theory of percussion-sounds is of no clinical importance, the inferences drawn from percussion of the chest being sufficiently correct for purposes of treatment. However this may be, it must be admitted that the reasons assigned for the occurrence of particular notes are often unsatisfactory, and that there is no generally received explanation of percussion-sounds. Although patients may not suffer by the variety of opinions, students are much puzzled by receiving a different interpretation of the same signs from each of their clinical teachers, and it is therefore desirable, if only on this account, that a true theory should be found.

Attempts have been made to elaborate a theory of percussion *a priori* from the known laws of sound, and all these appear to me to be open to two serious objections: first, that, like all *a priori* explanations of natural events, they are extremely liable to be wrong; and, secondly, that even supposing them to be right, they must necessarily be incomprehensible to the majority of medical men who are not critically familiar with the laws of sound.

[1] This paper was read as a Graduation Thesis for the M.B. degree at Cambridge.

I shall therefore confine myself to a description of the obvious physical conditions upon which the different percussion-tones appear to depend, and shall not attempt any technical acoustic explanation of the causes of the different sounds.

First, I shall consider the lungs by themselves when removed from the body. Secondly, the chest without the lungs. And last, the chest and lungs together, as in ordinary clinical percussion; and here I hope to be able to explain some of the more important percussion-tones of disease by the results of my experiments.

The experiments which I am about to describe were suggested to me by a passage in the second edition of Dr. Gee's work on "Auscultation and Percussion." At page 78 he says: "The lung consists of a multitude of open sacs and tubes. But the minute vesicular element of the lung and the minutest bronchiola are, both singly and collectively, too small to resonate. The pulmonary percussion-tone is produced in the middle-sized and largest bronchia. And the vesicular or spongy structure is nothing but an inert membrane, so far as concerns the production of tone. These doctrines, which were first set forth by Wintrich, must be well understood; they alone make it possible to explain the physical conditions of the percussion-sounds of the lungs in health and disease."

In a note to this important passage, Dr. Gee says: "I quite understand that this doctrine may be disputed, and cannot be experimentally proved. Yet I do not see how we can set forth any theory of percussion which does not assume that the spongy structure of the lung has nothing to do with the production of sound."

I believe, with Dr. Gee, that this cannot be experimentally proved, and I hope to go a step further and show that it may be experimentally disproved in a sufficiently simple and conclusive manner.

In order to determine whether the percussion-tone[1] of a lung removed from the body is produced in the vesicular structure or in the bronchial tubes, I injected about three-quarters of a pint of gelatine[2] into the bronchus of a sheep's lung and tied the bronchus. This must necessarily have filled all the larger bronchial tubes, but the lung remained resonant.

Into a second lung I injected as much water as it would contain without being greatly distended. In parts of this lung the

[1] All lungs and froth were percussed on a large block of stone. The experiments were performed both by percussion with the fingers and with a hammer and pleximeter.

[2] Gelatine is perfectly dull.

water entered the vesicles, and patches on its surface became more transparent. These patches were dull, but the rest of the lung remained perfectly resonant, although the bronchial tubes must have been filled with water.

Both these experiments seem to show that the resonance of the lung is not due to the bronchial tubes alone; but since it was just possible that some tubes might have escaped being filled and that the resonance was due to these, I determined to make an artificial lung in which there should be no bronchial tubes at all. This is easily done by making a fine froth of gelatine. The gelatine must be whipped as it is setting, and by sufficient beating the bubbles may be made so small that the mass, unless very closely examined, appears of an opaque white colour, the individual bubbles being as small as the vesicles of a human lung. This substance, containing no tubes or large air cavities, is resonant, and gives a percussion-tone almost identical with that of lung.

If it is objected that the vesicles in a natural lung are open cavities and those in gelatine froth closed cavities, and therefore that the cases are not parallel, it must be remembered that it is almost impossible to squeeze all the air out of a lung; that this difficulty depends not upon stiffness of the vesicles, but upon obstruction to the escape of air; and that when a lung is removed from the body, those vesicles which continue to contain air do so because its escape is obstructed, and because they have become for the time closed cavities.

I think, therefore, that the foregoing experiments prove conclusively that the vesicular structure of the lungs is resonant, and that a percussion-tone is produced in it.

The pitch of the percussion-tone appears to depend mainly upon two conditions:—First, the size of the lung or portion of lung struck; and, second, the amount of air in the lung or portion of lung.

With regard to the first, a whole lung gives a tone of a certain pitch, half a lung a tone of a higher pitch, a quarter of a lung a still higher tone, and so on. The same holds good with the froth; the smaller the piece the higher the pitch of the percussion-tone. In this respect lung behaves like a bladder or single air-containing cavity; a large bladder giving a lower note than a small one.

It may be mentioned here that the percussion-tone of the trachea is much higher than that of the whole lung; it is nearly equal to the note of a piece of lung of the same diameter as the trachea. This fact alone would tend to show that the percussion-tone of the lungs does not solely depend on the bronchial tubes,

for if it did, the percussion-tone of the lungs should be higher, and not lower, than that of the trachea, since the bronchi are much smaller than the trachea, and therefore probably have a higher percussion-tone.

The shape of the lung or froth is important. In order that the notes may be proportional to the sizes, the measurements must be about the same in every direction. A thin slice gives a higher note than the same mass would do if made into a cube or sphere.

As I said above, the pitch of the percussion-tone varies not only with the size of the lung, but with the amount of air in it.

In the previous experiments the froth was made to contain as much air as possible, in a very finely divided state; by using a somewhat stronger and therefore more rapidly setting solution of gelatine, a froth can be made in which the bubbles are small and evenly distributed, but much less numerous, so that the substance is translucent instead of opaque. This form of froth is resonant, but, taking equal-sized pieces, gives a much higher percussion-tone than the more airy froth.

An analogous change in the percussion-tone of a lung may be made by filling it to a great extent with water and then allowing the water to escape; in this way the vesicles are partially filled with water and the amount of air in them diminished, and the percussion-tone rises considerably.

The same high-pitched note is obtained from lungs which contain less than the normal amount of air from pathological causes. Œdematous and partially pneumonic lungs when removed from the body give high-pitched percussion-tones, provided that they contain sufficient air. When air is absent they are dull.

Before describing the effects of tension on the percussion-tone of the lung, I wish to remark that the difference between a collapsed and distended lung is not one of tension alone. When the lung is collapsed many of the vesicles are completely empty and their sides are in contact. As air is forced into the lungs, some of the empty vesicles are filled and the lung increases in size without any very great increase in the tension of the vesicular structure. The tension cannot become considerable until all the vesicles are filled and the lung is much larger, and contains a much greater proportion of air to lung tissue than when it was collapsed.

These facts obviously make the comparison between a collapsed and tense lung and a slack or tightly distended bladder very imperfect; it is, however, a fact that the differences in the percussion-tones are very much the same. A collapsed

lung and a moderately slack bladder both give a clear percussion-tone. As the tension increases the tone rises, and at the same time becomes less clear, and finally, with great tension, almost dull.

The change of pitch is not very great in either the bladder or the lung, and is insignificant compared with the changes produced by alteration in the size of the lung or the amount of air contained in the vesicles.

With regard to the loss of resonance due to increased tension, it must be remembered that the resonance of the lungs depends upon the vesicles containing air; in other words, upon their contents being compressible, and that when a lung is removed from the body, an increase in its tension means an increase in the density, and consequently a diminution of the compressibility of the air contained in the vesicles.

The results obtained from the above experiments may be summed up as follows:—

(*a.*) The resonance of the lungs depends upon the presence of air in the vesicles, and a percussion-tone is produced in the vesicular structure.

(*b.*) The pitch of the percussion-tone depends mainly upon two conditions—

1. The size of the lung or portion of lung.
2. The amount of air contained in the lung or portion of lung.

(*c.*) The effect of the tension of the lung on the pitch of the percussion-tone is small.

Hitherto I have considered the percussion-tones of the lungs apart from the chest.

I will now consider the percussion of the chest apart from the lungs.

If a small tube is inserted into the chest so as to allow air to enter the pleural sac, the percussion-tone is not much altered by the formation of the pneumothorax.

If air is now forced through the tube so as to distend the pleural cavity, the percussion-tone rises in pitch and becomes less clear.

If water is injected as well as air so as to form a hydropneumothorax, the note over the part containing water is dull, and that over the part containing air is higher pitched than the note of the pure pneumothorax. The greater the proportion of water to air the higher the pitch of the percussion-note over the air. In other words, the smaller the air-containing space within the chest, the higher is the pitch of the percussion-tone.

In making this experiment, it is necessary to inject a certain

quantity of water before the change of pitch becomes easily appreciated.

If the chest-wall is made œdematous by injecting water under the skin, or covered with a layer of non-resonant material, such as slices of liver, the percussion-tone becomes less clear in character without becoming much altered in pitch.

In clinical percussion both the chest-wall and its contents must be considered.

Dr. Graham Brown ("Medical Diagnosis," p. 164) says: "The vibrations of the thoracic wall are of so ill-marked a character (unless the point struck lie over the rib in a very thin subject), and have so little intensity as compared with the intrathoracic note, that in themselves they need hardly be considered; though, as I will presently point out, the condition of the chest-wall and its vibrations when percussed have a very important influence on the character of the intrathoracic note.

"The vibrations of the air in the lungs constitute the important part of the percussion-note."

According to Dr. Bristowe ("Theory and Practice of Medicine," p. 362), "the chief cause of the resonant quality of the percussion-note is the vibration of the struck walls, which is permitted by the fact that an elastic medium—the air—is situated on either side of them. It is obvious, however, that the elasticity of the inflated lungs is less than that of the free atmosphere outside, and that hence the vibration of the thoracic walls must be to some extent less perfect than it would be were the air on both sides equally free to move.

"The sound, we repeat, is mainly due to the vibrations of the thoracic walls alone. . . ."

Thus, according to Dr. Graham Brown, the vibrations of the air in the lungs are most important, and, according to Dr. Bristowe, the vibrations of the chest-walls are alone to be considered.

Dr. Bristowe, of course, uses the word elastic in the sense of compressible. He does not state upon what grounds he refers the percussion-tone of the chest to the vibrations of the walls alone.

The question whether the percussion-tone of the chest is produced by the chest-walls or the lung appears to me to be an idle one. In order that the chest may be resonant its contents must be of a certain nature; if it is filled with fluid, neither contents nor wall will resonate—as far as we know, it must contain gas in some form, either free as in pneumothorax, or more or less confined as in lung or froth. The question, therefore, resolves itself into this—are the chest-walls resonant or the gas enclosed by them?

Now, gas cannot be percussed unless it is surrounded by some form of wall, and the chest-wall is not resonant unless it surrounds gas. Two factors being necessary to produce resonance, it is idle to inquire which of them is most essential.

The same difficulty, if it is so considered, occurs in the percussion of the lung itself. Is lung resonance produced by the vibration of the lung tissue or of the air contained in it?

When the living chest is percussed, wall and contents must be considered together as a whole; changes in either of them may cause alteration in the percussion-tones. The results of my experiments show, I think, upon what structural changes certain peculiar notes depend; but before attempting this explanation, I will quote a few of the theories given in text-books to account for the high-pitched note occurring in an early stage of pneumonia, in order to show what different answers might be expected if the question were asked in an examination.

According to Dr. Bristowe,[1] there is probably a diminution of vibrating area (of chest-wall) in the first stage of pneumonia over the affected lung.

According to Dr. Gee,[2] "The lung is relaxed interstitially by solid or liquid intimately mingled with air containing tissue. Hence the clear tracheal tones sometimes yielded by pneumonia at its outset or during resolution."

The reason of this clear note on relaxation being that (page 80) "the layer of spongy structure around the bronchia has become thinner, and also probably more apt to consonate by loss of tension; in short, a better conductor of the bronchial tones."

Finally, Dr. Graham Brown[3] says, "In the first stage of pneumonia the change in the note seems to be produced by relaxation occasioned by the inflammatory congestion of the lung tissue." But his account of the mode of action of the relaxation is totally different from that given by Dr. Gee. He says that "the air in the collapsed lung vibrates as a whole, and the lung tissue is not sufficiently tense to admit either of its passing into vibration, or the stronger septa breaking up the air columns so as to render the combined note irregular and non-tympanitic, as is the case when the lung is in a state of normal distension."

These three views may be summarised as follows:—

Dr. Bristowe.—Probable diminution of vibrating area of chest-wall over part of lung in first stage of pneumonia.

Dr. Gee.—Partially pneumonic lung is relaxed, and relaxed lung is a better conductor of the bronchial tones than healthy lung, and more apt to consonate with them.

[1] Loc. cit., p. 365. [2] Loc. cit., pp. 93, 94. [3] Loc. cit., p. 175.

Dr. Graham Brown.—Partially pneumonic lung is relaxed, and the air in it vibrates as a whole, the lung tissue not being sufficiently tense to give the sound the character it has in health.

The only point in which they all agree is that a high-pitched note often occurs in cases of commencing pneumonia, a fact about which there can be no doubt, but which can hardly be said to be clearly explained or generally understood when the most recent authorities treat it so differently.

Dr. Gee has summed up the matter very concisely at page 8 of his work, where he remarks that "the theory of percussion is not so simple as many deem it to be." This, though a fair criticism on certain given theories, must not be supposed to imply that any theory is sufficiently general to deserve the name of "*the* theory of percussion," since (whatever may be deemed) many different theories occur in the text-books.

The above quotations appear to me to be sufficient to prove the first part of my thesis, "that there is no generally recognised theory of percussion." I shall therefore give no more, but proceed to a short account of the bearing which the facts that I have brought forward appear to me to have upon clinical percussion.

There appear to me to be two classes of cases in which abnormally high-pitched percussion-notes occur; in one the high note can be explained by the fact that the *size* of the lung is diminished, and in the other by the fact that the *amount of air* in the lung is diminished. These cases may occur separately or combined; the size of the lung being diminished and the amount of air in it also diminished.

Among cases depending upon size, the simplest is that of chests of different sizes. If we percuss different individuals, beginning with a little child and ending with a full-grown adult, the percussion-tones form a scale; the highest note being produced by the smallest chest.

The size of the lung may be altered in disease. In extensive pneumonia of the base, with complete solidification, a high-pitched note is produced over the healthy lung at the apex, and the same high note occurs over the unaffected lung in cases of solidification from new growths. The lung on the affected side is reduced in size proportionally to the amount of solidification, for the solid part is, as regards percussion, no longer lung, and as completely removed from the healthy part as though it had been cut off. The high note is due to the smaller size of the air-containing cavity within the chest.

Among cases due to diminution of the air in the lungs, the

most striking is that of incomplete pneumonic consolidation, either at the beginning or end of the pneumonic process. The high note remains after the lungs are removed from the chest, and, as I have shown, the conditions for it may be produced artificially by injecting water into a healthy lung. It is analogous to the high note obtained from froth containing little air.

But pneumonia is not the only disease in which this change of note is found; it occurs in phthisis where there is temporary engorgement of healthy lung around a diseased spot. A patient suffering from phthisis may come into hospital with a high-pitched note over a great part of one apex, and after a few days' rest the percussion on the two sides may become nearly equal, owing, no doubt, to the removal of the local œdema and the restoration of the normal amount of air to the vesicles. I have seen a case of this kind where there was no evidence of phthisis in a patient suffering from mitral stenosis. On admission the whole of the right apex gave a very high-pitched note, and the breathing was much oppressed. During the next thirty-six hours, she spat up a large amount of frothy mucus, and the note became perfectly natural, the expectoration ceased, and the patient appeared well.

The high-pitched note of the apex and front of the chest in pleurisy probably belongs to the mixed class of cases; part of the lung is often solidified and the rest œdematous. This would alone account for the high note, but in addition the cavity of the chest is partly filled with fluid and thus diminished. I have shown above that a hydro-pneumothorax gives a higher note where there is resonance than a pneumothorax. This may possibly account for the peculiarly high note often produced in these cases.

In phthisis with solidification both causes of high notes may be present.

It would be useless for my present purpose to give a more detailed list of the different cases to which my results appear to offer some explanation. I have no doubt that, as far as the lungs are concerned, alterations in pitch of the percussion-tone will be found to depend upon one or other of the two causes I have mentioned, and that if in every case of high-pitched percussion-note these causes are borne in mind, very few will remain in which the tension of the lung can be shown to have any appreciable effect.

The percussion-notes of the chest, after a full inspiration and after a full expiration, are, as Dr. Reginald Thompson remarks in his book "On the Physical Signs of the Chest," different. The full chest giving a higher and less clear note than the more

empty one; but it must be remembered that here there is a difference in the tension of the chest-walls as well as of the lungs. The difference in the notes is, in fact, the same as that between a slack and tense pneumothorax, where the tension of the lungs is out of the question.

The results of the experiments upon which I have relied contradict some of the statements that I have quoted; first, the statement that the resonance of the lungs is due to the bronchial tubes alone; and, secondly, the statement that relaxation of the lung is the chief cause of the high-pitched note in pneumonia. This contradiction proves the second part of my thesis.

GRANULAR KIDNEY OR INTRACRANIAL DISEASE?

TWO CASES OF HEADACHE, VOMITING, FITS, AND DOUBLE OPTIC NEURITIS, ASSOCIATED WITH CHRONIC EAR-DISEASE, BUT DUE TO GRANULAR KIDNEY.

BY

SAMUEL WEST, M.D.

I. Josephine W., aged 21, single, came to the hospital complaining of severe headache and occasional fits, from which she had suffered more or less for two years, and which she attributed to grief for the loss of her father, who died shortly before this time.

The fits were of frequent occurrence. Sometimes even two or three a day, and lasted each some minutes, and occasionally half an hour; they were generally, but not always, attended by loss of consciousness, and usually preceded by a "bilious attack," *i.e.*, by sickness and vomiting, sometimes for twenty-four hours before the attack began. For two years she had had a chronic discharge from the left ear, though she had been slightly deaf from childhood. During the last six weeks she had been troubled with frequent micturition, and had been altogether worse; and during the week preceding her admission had suffered intense agony from headache, and had had several fits. There was no history of any illness beyond those mentioned.

She was a small but fairly developed young woman, extremely pale and anæmic. Her face bore an expression of pain. She suffered from very severe headache across the brows and vertex. Beyond slight increase of the cardiac dulness and of the heart's action, there were no physical signs in her chest. The arteries were unduly hard for a girl of her age. The pupils were slightly

dilated, but were equal, and reacted readily to light. There was well-marked double optic neuritis, with numerous white patches and copious hæmorrhages, and this although she did not complain of any defect of vision.

On the evening of admission she had a fit, during which she threw herself violently from side to side, clenched her hands, and had severe retching but no actual vomiting. She did not lose consciousness, but complained of palpitation and pain in the cardiac region, and of a choking sensation in her throat. She was in an extremely hyperæsthetic, almost hysterical condition, so that the slightest touch or interference distressed her. The urine was now found to contain albumen, as well as some blood, and to be of low specific gravity, but no casts could be discovered.

The severe persistent headache, with fits and double optic neuritis, associated with discharge from the ears and deafness of long standing, suggested the diagnosis of some intracranial mischief, either chronic meningitis or abscess in connection with disease of the middle ear; but the hypertrophy of the heart, the thickened arteries, and the characters of the urine, with the peculiar condition of the retina and disc, made it at least quite as likely that granular kidney was the cause of the disease.

The course of the case was shortly this:—

For some time after admission she remained in *statu quo*, the headache and retching being severe, and the fits occurring at irregular intervals. As the headache prevented sleep, cannabis indica was administered in ℿxx. doses three times a day, with a double dose at night. This had an excellent effect for a few nights, and, coupled with hot baths daily and iron as a tonic, she improved for about three weeks. The urine, however, still remained scanty and albuminous, and from time to time was bright red from the presence of blood. The symptoms then returned and the urine diminished. Vapour baths were then administered with a diuretic mixture. This also relieved for a time.

The optic neuritis remained all the time in *statu quo*. The hæmorrhages, which were exceedingly numerous, were slowly absorbed, and but few fresh ones appeared; but otherwise the retina and disc were but little changed.

The patient gradually grew more anæmic, and with the change began to complain of greater præcordial pain. The heart-dulness was found further increased, and a blowing systolic murmur was audible over the whole præcordial region, though loudest at the left base and at the apex, faint in the intermediate parts, and not audible at all in the axilla or behind, or away from the præcordial region. The murmur was therefore a dilatation, and not an organic, murmur.

At the same time the legs and arms began to be slightly œdematous, but the œdema never became considerable.

Fourteen days after admission she had a severe attack of epistaxis, which was repeated the next day, the patient losing on each occasion about half a pint of blood. This recurred, though not so severely, on several subsequent occasions, and though it temporarily relieved the headache, of course increased the anæmia.

With the increasing anæmia the præcordial pain increased, until it became the chief symptom of which she complained.

The condition of the arteries remains to be noticed. The slight thickening has been already referred to, but what was chiefly remarkable was the rapid and apparently causeless variations in the tension of the vessel. No tracings could unfortunately be obtained, but the artery could be felt at one time quite hard and rigid, the pulse being small, with a long low wave, as is characteristic of granular kidney, and shortly after becoming large and soft, with a full and short wave. These rapid variations of tension I have lately noticed also in a second case of chronic nephritis, but in this latter case the kidneys were not granular, but in a condition of chronic parenchymatous inflammation.

The patient became rapidly exhausted, though at last she became so noisy and almost maniacal that she had to be isolated.

On post-mortem examination the heart was found greatly hypertrophied, weighing 15¾ oz., the left ventricle measuring nearly an inch in thickness, though the patient herself could hardly have weighed more than six stone. The left kidney weighed 3 oz.; it was small, granular, very fibrous, the capsule adherent, and the cortex much reduced in thickness. The right kidney measured only 1½ inch long by ¾ inch broad, and was very little more than a fibrous capsule of about $\frac{1}{16}$th inch in thickness. The pelvis and ureter of this side were of normal size, or perhaps even a little larger than normal. There was no obstruction in the course of the ureter, and no cause for this condition of the kidney could be found, though from the smallness of the arteries and veins it was clearly of old date. There was a little serum in the ventricles of the brain, but beyond slight thickening of the vessels, the brain and meninges were absolutely healthy. The pleural, peritoneal, and pericardial sacs contained a little clear serum, and the spleen, lungs, and liver were congested.

II. The second case occurred in a woman, aged 50, an out-patient at Victoria Park Hospital, who came complaining of debility and frequent morning sickness, which in a temperate woman of her age, in whom the catamenia had been absent for five years, was peculiar. On inquiry, I found that she had been losing power for about twelve months, during which time she had occasionally

"fainting" fits, and for the last eight months had been troubled with frequent micturition.

She had had a chronic discharge from the ear since scarlet fever in childhood, and had suffered from periodical headaches all her lifetime. Double optic neuritis was found, with numerous white patches in both eyes; and on examining the urine, it contained a moderate quantity of albumen. The arteries were a little thickened, but not remarkably for her age. There was no œdema of the feet. Her sight it appeared had been slowly failing for twelve months. There was no history of any previous renal disease.

She was under observation for about four weeks, during which time the optic neuritis increased considerably, but the other symptoms remained unchanged. She then absented herself from attendance, and has since been lost sight of.

I am justified, however, I think, in referring the symptoms in this case also to granular kidney.

The two cases were remarkable on account of the clinical difficulties they presented.

The history of long-standing ear-disease, with the recent occurrence of sickness, headache, fits, and double optic neuritis, seemed to point almost conclusively at first sight to intracranial disease, as a consequence of middle ear mischief. But the character of the neuro-retinitis, with the presence of albumen in the urine and thickened arteries, rendered the diagnosis of granular kidney at least equally likely. So striking was the clinical history which the first patient gave, that the case was regarded at first as certainly one of intracranial mischief, and it was only on careful examination of the eye that the possibility of kidney disease presented itself, and the facts in favour of this view were ascertained.

The first case presents also other points of clinical interest in the history of granular kidney:—

1. The intense agonising headache, occurring in paroxysmal attacks, to which the term "fits" had been applied by the patient, and which was associated in the later period with attacks of wildness almost severe enough to be called maniacal. Fits of this kind are among the rarer complications of granular kidney, but I can recall one other case of exactly the same kind occurring in a male of the age of 55.

2. The variations in arterial tension noticed in this case are of great importance in connection with the paroxysms of headache, for such spasmodic contraction of vessels has been assumed as an explanation of some cases of hemicrania, and the male patient just referred to, who died of granular kidney at 55,

had for years suffered from sick headache, and at one time referred his attack to such a spasm of the vessels of the brain.

3. *The epistaxis.*—This is not often, I believe, so severe as in the present instance. Half a pint of blood or more was lost on several occasions, and of course added very greatly to the extreme anæmia, which had been for some time previously slowly developing.

4. *The præcordial pain.*—This which, towards the end of life, except for the headache, became the prominent symptom, is, I think, rightly attributed to the heart, which, as percussion demonstrated, was very considerably dilated. The dilatation was due, doubtless, to the anæmia, and it increased as the anæmia increased; and with the increase the pain also increased, and slight œdema of the feet developed.

These two cases I have thought worthy of record on account of the clinical difficulties they presented, and because they are, as far as my experience carries me, rarely met with.

A CASE OF PRIMARY MALIGNANT DISEASE OF THE LUNG.

BY

PERCY KIDD, M.D.

Intrathoracic new growths, of whatever nature, are always of great interest, both from their intrinsic gravity and from the difficulties in diagnosis which they often present.

The following case is not only a remarkable one from a clinical point of view, but has in addition special importance in connection with the pathological anatomy of this disease.

The patient, whose case I shall now shortly describe, died in the Brompton Hospital, having been successively under the care of Dr. Mitchell Bruce at the Charing Cross Hospital, and of Dr. Symes Thompson at the Brompton Hospital, to both of whom I am much indebted for the use of their clinical notes.

Archibald M., aged 36, was admitted into the Charing Cross Hospital, under Dr. Bruce, June 9, 1883, complaining of pain in the right side of his chest, cough and hæmoptysis. His history was, that he had been quite well and had never had any illness till about a year ago, when he had some articular pains, which he referred to a chill. He has since suffered with such pains more or less until the present time.

About five months ago he was attacked with cough, slight hæmoptysis, and fresh "rheumatic" pains in his joints, in consequence of which he was confined to bed for a few days.

He consulted a doctor, who told him that he had congestion of one lung.

In February he went to Ryde, and had some hydropathic treatment. During the two months he remained at Ryde he improved much in general condition, but cough and some

hæmoptysis persisted all along. At the end of this time he began to suffer from severe pain in the right mammary region, which has lasted ever since.

No history of syphilis.

Family history.—Father paralysed; mother died of "liver disease." No tendency to phthisical or malignant disease.

On admission the patient was fairly well nourished, but rather anæmic. Finger-nails slightly clubbed.

Chest.—Right side: A distinct bulging is seen between the nipple and mid-sternum. Movements of chest less than on left side. Vocal fremitus felt all over the chest, but diminished over the area of bulging. Almost absolute dulness to percussion over the whole front, except at upper and lower margins of the swelling, where percussion is somewhat tubular. Dulness extends to left as far as mid-sternal line.

Over the upper half in front weak distant bronchial breathing is heard, and in the first space there is bronchophony and whispering pectoriloquy.

Over the lower half the breathing is very weak and vocal resonance is fairly natural. At the bulging area there is some crepitation, and the heart-sounds are distinctly audible.

At the right supraspinous fossa there is dulness, weak bronchial breathing, bronchophony, and whispering pectoriloquy.

The rest of the back is resonant to percussion, but the breathing is weak; vocal resonance and fremitus are unaltered.

Left side: Normal, with the exception that the breathing is somewhat weak.

Heart: Apex-beat in fifth space a quarter of an inch to the inner side of the nipple line.

Cardiac dulness to the right continuous with that of the area of bulging, otherwise normal. First sound at apex rather long; heart sounds otherwise natural.

Cyrtometric tracings of the chest showed very considerable enlargement of the right side.

Sputum consists of thin reddish mucus, resembling red currant jelly.

Urine natural, sp. gr. 1012. No albumen or sugar.

Appetite fairly good. Tongue furred, with reddish tip and central streak. Temperature, 100°.

June 12.—Microscopical examination of the sputum failed to discover bacilli.

After consultation, an exploratory puncture was made in the site of the tumour by Mr. Barwell, but only a minute quantity of a red grumous-looking fluid was withdrawn.

After the point of the hypodermic syringe had been inserted

into the tumour, it was moved from side to side, but did not appear to be in a cavity of any sort.

The drop of fluid withdrawn was examined microscopically, and contained some fat, red blood corpuscles, and cells indistinguishable from leucocytes, with some epithelial scales, probably epidermic.

The proportion of leucocytes to red corpuscles was greatly in excess of that in healthy blood.

A drop of blood from the patient's finger showed no such excess.

No unpleasant results followed the exploratory puncture.

The patient remained in much the same condition during the whole time he was in the hospital.

Cough and pain in the side persisted, with expectoration of the same clear reddish sputum, though the amount of blood contained therein varied slightly from time to time.

The temperature maintained the same character throughout, the morning temperature being normal or only slightly above normal, the evening temperature varying from 100° to 101°.

An eczematous eruption on his left leg gave rise to much irritation from time to time.

On June 22d it is noted that the patient cannot lie on his left side without much coughing, but can lie either on his back or right side.

There is slight pain on pressure over the tumour, which appears more prominent.

Dulness as before. Still some peculiar tubular percussion above and below the swelling, especially in the second interspace. Vocal fremitus over tumour feeble, but not absolutely lost. In the second interspace there is weak but rather hollow breathing, with a few large sharp râles, which can be agitated by cough. At the sternal end of the same space there is marked bronchophony, both phonic and aphonic.

Over the area of tumour respiration is almost inaudible, of indefinite quality, and accompanied by peculiar inspiratory and expiratory sounds resembling those of friction.

A few days later another exploratory puncture was made in the same position as before, and again only a small drop of fluid was withdrawn. This contained some red corpuscles, and numerous cells like leucocytes.

No further change occurred in the general condition, or in the physical signs.

The sputum was repeatedly examined, but contained only blood corpuscles.

No bacilli could be discovered.

The diagnosis was considered to lie between empyema and malignant disease of the mediastinum or lung, though rather in favour of empyema.

The treatment was purely palliative—expectorants, sedatives, and poultices to the chest.

There was no improvement in the condition of the patient, and he left the hospital on July 11th.

On July 23d he was admitted into the Brompton Hospital, under Dr. Symes Thompson, having been almost entirely confined to bed since leaving Charing Cross Hospital. For the sake of brevity I shall give only a short abstract of the notes relating to the termination of the case, except in so far as they describe any change either in the general condition or physical signs of the patient.

On admission the patient was very anæmic, and was suffering much from dyspnœa and frequent short cough, with expectoration of frothy mucus mixed with blood. The skin covering the thorax was slightly œdematous.

The respiratory movements of the chest were very defective, especially on the right side. There was the same local bulging and diminution of vocal fremitus in the right mammary region that have been previously described; the same dulness, with marked sense of resistance over the corresponding front, extending now, however, over the whole axilla also. But in the second and third intercostal spaces, close to the right edge of the sternum, percussion was markedly tympanitic, with tubular breathing over the same area.

Over the right front elsewhere and in the axillary region the breathing was weak, and accompanied by abundant pleuritic friction sounds. Moist crepitation was heard in the mammary region. The heart sounds were loudly heard all over the right front and side.

Behind there was dulness at the supraspinous fossa and at the base, with some deficiency of resonance elsewhere.

In the upper interscapular region hollow breathing was heard, with bronchophony and pectoriloquy. Weak breathing and pleuritic friction sounds over the rest of the back.

At the angle of the scapula cough had a cavernous character, and there were abundant gurgling râles.

Left side resonant throughout; slight friction round the base; physical signs otherwise normal. Heart slightly displaced outwards; apex-beat in the nipple-line, fifth space; sounds natural. Liver felt about an inch below the margin of the ribs. Urine, specific gravity, 1024. Abundant deposits of urates; no albumen.

Temperature, 101.

The day after his admission the patient had copious diarrhœa, which was however controlled by bismuth and opium.

Aug. 1.—A considerable alteration in the physical signs was noticed.

"The tympanitic percussion at the second and third spaces now extends some distance outwards towards axilla, and reaches down to the fifth space near the sternum. Over this area the 'cracked-pot sound' can be easily obtained.

"Marked cavernous breathing and pectoriloquy over the upper part of the tympanitic area. The subclavicular region seems to have somewhat fallen in. Less friction sounds on the right side than last week.

"Hardly any breath sounds heard over the dull area of right front and side, though the heart sounds are still very audible."

The temperature throughout presented a hectic type, ranging mostly between 101° and 98°, though on one occasion it reached 102.4°, and during the last few days of life it fell once or twice to a degree below the normal.

The blood-stained expectoration continued almost uninterruptedly to the end.

There is nothing further to note beyond gradually increasing exhaustion.

Aug. 14.—The patient died at five P.M.

No positive diagnosis was arrived at, though the disease was thought to be probably malignant.

Autopsy twenty-two hours after death.—Rigor mortis present. Body much wasted. A cluster of slightly enlarged glands in right axilla. Bulging of right side of chest in mammary region. On removing the sternum, the right pleura was very firmly adherent to the chest-walls throughout and to the pericardium. The anterior margin of the pleura over the right upper lobe was greatly thickened, and of a whitish medullary appearance, especially at the inner part of the second and third spaces, where there was a whitish medullary infiltration of these same intercostal spaces. In this position the pleura and chest-wall had to be separated with a knife, so intimate were the adhesions. The bones and cartilages did not appear to be implicated, nor was there any apparent infiltration of the skin over them.

There were loose scattered adhesions of the left pleura to the chest-walls and pericardium. No growth in the anterior mediastinum. The right lung was distended, especially in its upper part in front, and was very heavy, but its general contour was well preserved. It was consolidated almost throughout, with

the exception of the posterior base, which was crepitant, although containing scattered nodules.

The consolidation consisted of white softish sprouting nodular masses, varying in size from that of a pea to that of a bean in most cases, though some were much smaller, and a few larger. Many of the larger nodules showed a somewhat softened spot at their centre. This growth had almost entirely replaced the lung tissue, though traces of spongy lung could be detected in many places, especially towards the base.

In those parts where the nodules were smaller and less closely packed there were tracts of intervening whitish infiltration. In the lower parts of the lung there were abundant greyish miliary nodules resembling miliary tubercles. Small irregular cavities were found in the upper and middle lobes corresponding to the subclavicular and mammary regions. Nodular masses projected freely into these cavities, which had no distinct lining membrane, and contained thick blood-stained puriform fluid. No caseous matter was seen anywhere. The apex of the lung was somewhat puckered on the surface.

The secondary bronchi of the right lung were much compressed, but contained no growth apparently. The main bronchus was unaffected. The left lung was large and spongy, but contained scattered miliary nodules and some whitish masses as big as peas like those in the right lung. The apex was puckered as on the other side. Bronchi unaffected.

Bronchial glands not enlarged; irregularly pigmented, but somewhat medullary on section in places.

Posterior mediastinal glands enlarged, and resembled the axillary glands on section, being soft and of whitish colour. The largest of these glands did not exceed a filbert in size.

Larynx, trachea, and heart natural. The abdominal organs were healthy with the exception of the liver, which weighed 5 lbs. 7 oz., and was large, soft, and fatty. A few retroperitoneal glands as large as peas lay alongside the aorta, resembling the axillary and posterior mediastinal glands on section.

Some of the liquid contents of the cavities in the right lung were carefully examined microscopically for "tubercle bacilli" with a negative result.

A microscopical examination was made of the lung and axillary glands after hardening. The enlarged axillary glands presented the appearance of encephaloid carcinoma, groups of rather large epithelial cells of various shape closely packed in delicate alveoli being distributed through the sections. These cells contrasted strongly with the small lymph corpuscles in the unaffected portions of the glands. Here and there the alveoli

contained some very large spherical cells with three, four, or more nuclei centrally grouped. Minute foci of a finely granular substance were seen in a few places, especially where the new growth came into contact with the gland tissue. Sections of the lung showed that there was more spongy tissue between the nodular growths than appeared to the naked eye.

The greater part of these nodules was composed of cells rather larger than lymph corpuscles, with traces of an alveolar network; but in all cases careful examination showed that there were also groups of large irregularly shaped epithelial cells contained in delicate alveoli. This alveolar framework was very evident in the thinnest sections, where some of the large cells had been detached.

Isolated tracts of a fibrous meshwork containing small cells were present in some sections. In the infiltrated portions of the lung, where the nodules were small and scattered, the microscope revealed an intense condition of catarrhal pneumonia, the alveoli of the lung being stuffed with abundant large pulmonary epithelial cells. In some lobules the air sacs were filled with blood corpuscles.

In the same section groups of alveoli were filled with small cells, which in a very few instances were undergoing development into connective tissue. Minute foci of a finely granular material corresponding to isolated alveoli were seen in a few cases. These spots, like those in the axillary glands, reminded one of the early stage of caseous degeneration. In many places the alveolar wall seemed thickened and infiltrated with small cells.

At first sight the lung presented more the characters of sarcoma than carcinoma; but the uniform presence in the nodules of carcinomatous foci, and the alveolar grouping of the smaller cells in many places, show that the growth in the lung is of a mixed type.

When, however, we consider the marked carcinomatous structure of the secondary deposits in the axillary glands, it becomes evident that the essential character of the disease was carcinomatous, for secondary deposits, as we know, invariably reproduce the original type of the primary growth.

The malignant disease was manifestly associated also with chronic inflammatory changes, which account largely for the infiltrated appearance of parts of the lung.

This case well illustrates the difficulties in diagnosis which attend intrathoracic new growths.

The physical signs at first pointed to empyema, though an exploratory puncture twice failed to draw off more than a drop

of fluid. The nature of this fluid, moreover, was misleading, as the abundance of leucocytes would fit in well with an empyema. The almost complete limitation of the physical signs to one side and the marked local bulging of the chest were opposed to the idea of phthisis. Again, although the question of malignant disease was carefully kept in view all along, the absence of any evidence of pressure, or of signs pointing to implication of the mediastinum, combined to obscure the diagnosis; for when new growths within the chest attain to any considerable size, they seldom fail to invade the mediastinum. Towards the close of the case the appearance of signs of destructive disease of the lung seemed to be most satisfactorily explicable on the hypothesis that the disease was malignant. So much for physical signs.

The temperature chart did not give much assistance for hectic fever, so common in empyema, and phthisis is also met with sometimes in cancerous affections of the lung. The persistent hæmoptysis and the peculiar red currant jelly sputum, sometimes met with in pulmonary new growths, are nevertheless not pathognomonic of this disease.

Walshe states that pulmonary cancer has a duration of 3.5 to 27 months, the mean being 13.2 months.

The present case seems to have lasted about eight months.

Primary malignant disease of the lung is considered by Walshe and some others to attack men more often than women, and to have a preference for the right lung. The case above described, so far as it goes, supports these views, and further bears out another statement made by Walshe, that primary cancer of the lung has very little tendency to give rise to secondary deposits in distant parts.

The most remarkable point, perhaps, in the whole case, is the pathological condition of the affected lung. That such an extensive new growth should remain practically confined to one lung is remarkable, though not altogether unusual; but that that lung should preserve its natural contour so closely is certainly a rare occurrence in the history of a rare disease.

THE ELECTRICAL DEPARTMENT.

BY

W. E. STEAVENSON, M.B.

The importance which electricity has acquired in its application to medicine induced the Governors of the Hospital, at the suggestion of the medical staff, to appoint a qualified medical man to organise and undertake the management of a complete electrical department. This appointment was made in October 1882, and I was so far honoured as to be selected for the post. The formation of such a department involved a considerable outlay, and therefore careful consideration and inquiry, so that the money expended might be used to the best advantage. A sub-committee of the staff was appointed to consider the matter and to advise and assist me in its arrangement. The plan has developed so far at the present time as to justify me in giving an account of what has been accomplished, and also an outline of the electrical work which has been done in the hospital during the past year.

The greatest difficulty we experienced was to find a suitable place in which to locate the department; every available place was occupied by some of the numerous special branches into which the great and ever-increasing work of the hospital is divided.

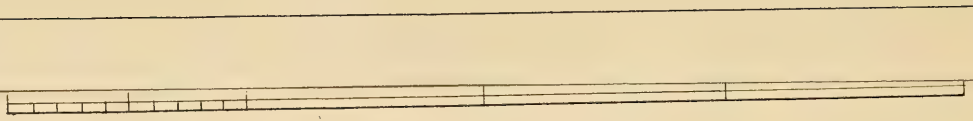
The exigencies of electricity demanded that the place selected should be warm and dry, that there should be space for the electrical machines and apparatus, and that these should not be subject to continual movement and disturbance, as would be the case if the room was used for any other purpose, and that there should be accommodation for the patients while waiting for treatment and for dressing and undressing, so that the whole business of the department should not be unnecessarily retarded.

It was ultimately decided to convert the room until recently used as the Coroner's Court into several compartments in which the different forms of electricity as used in medicine might be applied. A reference to the accompanying plan of the new

department will best explain how the space has been utilised.[1] One great feature is the establishment of a workship in which all the minor repairs of the electrical apparatus used in the hospital will be carried out. It is hoped that great saving both in time and money will result from this arrangement. The man employed to make these repairs will also have the custody of the building in the absence of the medical officer. He will receive notices from the wards of patients requiring electrical treatment by the electrician, and supply and receive back again the batteries used in the wards by other medical officers. He will also prepare the galvano-cautery batteries when they are required, and take them to whatever part of the hospital in which they may be wanted. In the room I have marked as No. 1 there will be a frictional machine for producing statical electricity and an insulated couch and benches; also a small table for operating purposes, such as operations on nævi, circumcisions, &c. The electricity for this purpose will be conducted from the cellar below, in which will be placed a powerful Bunsen's galvano-cautery battery of six cells. The necessary operating instruments will be kept in this room. There will also be an element board connected with sixty modified Leclanché elements (also in the cellar) for producing a continuous current for galvanic purposes. An additional tray of six cells will be used to work an induction coil for producing an interrupted current. A couch will be placed under this element board on which the patient can recline, and it will be possible to use the galvanic or faradic current at will. In room No. 2 will be a similar element board connected with the same number of cells and worked in a similar manner, but it will also be possible to use the current for the electric bath in the adjoining compartment. The portable batteries for use in the department and for lending to the wards will also be kept in this room, and also the electro-magnets belonging to the hospital. In the centre of the building a lobby has been formed, provided with benches for the patients while waiting for treatment.

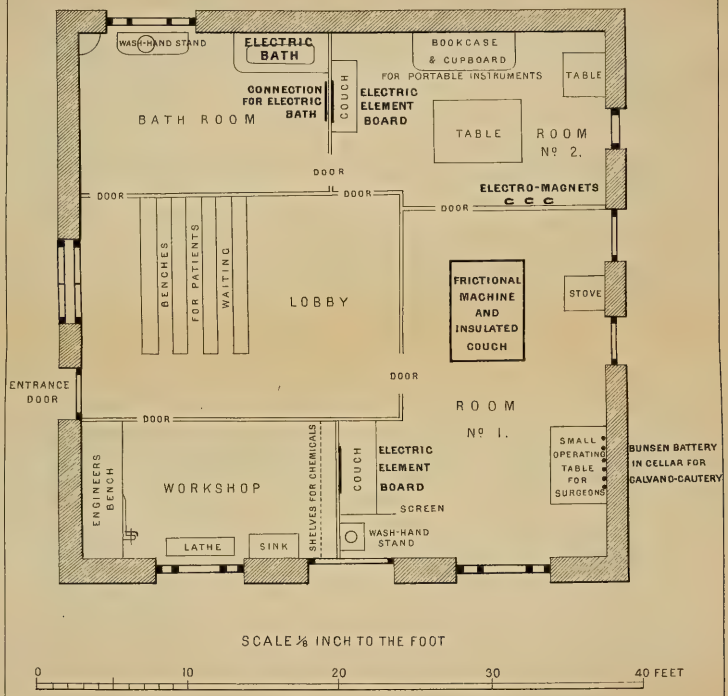
I can best show the amount of electrical work done by myself in the hospital during the year by a tabular arrangement. I have given in each case the reason why electricity was employed, and also appended a few remarks and a record of the result of the treatment. I almost invariably used one of Coxeter's portable combined batteries, so that I had with me either current which might be required.

[1] The arrangement was suggested by the Electrical Department for many years established at Guy's Hospital.



The Element Boards are each connected with 60 modified Leclanché cells (in the cellar below) and are provided with a commutator, interrupter, rheostat "on" and "off" shunt, galvanometer and induction coil. There are extra trays of 6 cells to work the coils. The Bunsen's Battery for galvano-cautery is composed of 6 cells.

STANFORD'S GEOGL ESTABT



The Element Boards are each connected with 60 modified Leclanché cells (in the cellar below) and are provided with a commutator, interrupter, rheostat "on" and "off" shunt, galvanometer and induction coil. There are extra trays of 6 cells to work the coils. The Bunsen's Battery for galvano-cautery is composed of 6 cells.

STANFORD'S GEOG.L ESTAB.T

Table of In-patient Cases.

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Result and Remarks.
1	F.	34	Hope.	Dr. Andrew.	Paralysis of left leg after confinement.	Treatment.	Much improved. Nov. 20, 1882.
2	M.	24	Luke.	Dr. Gee.	Paraplegia.	To test and compare electrical contractility of muscles of legs.	Application of abdominal pad electrode produced an attack of peritonitis. Dec. 1882.
3	M.	38	Luke.	Dr. Gee.	Lead palsy.	Treatment. December 1882.	Improved markedly under galvanism.
4	F.	26	Stanley.	Mr. Walsham.	Hysteria.	Whistling noise produced at each inspiration. No disease of larynx.	Faradic current applied to soft palate and posterior pillars of fauces. Dec. 1882. Completely cured.
5	F.	$2\frac{1}{2}$	Mary.	Dr. Gee.	Facial paralysis.	To test and compare muscles of both sides of face.	... ...
6	M.	44	Pitcairn.	Mr. Walsham.	Ligature of both femorals for double popliteal aneurysm.	Some contraction of right knee, and wasting and loss of power of muscles of leg from long confinement to bed.	Legs galvanised, muscles reacted naturally. Improved daily.
7	M.	41	Mark.	Dr. Andrew.	Admitted for retention of urine, with pain and loss of power, chiefly in right leg.	Muscles tested. Supposed that he might be malingering.	Increased excitability of muscles of right leg. Jan. 3, 1883.
8	F.	30	Martha.	Dr. Duncan.	Retroversion of pregnant uterus, causing retention on urine. Nov. 19, 1882.	Followed by paralysis of bladder, and continued inability to pass water voluntarily.	Treated with galvanism from Jan. 10 to 13, 1882, resulting in complete recovery and control over bladder.

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Result and Remarks.
9	M.	16	Pitcairn.	Mr. Walsham.	Anchylosis of shoulder-joint, followed by wasting of muscles.	To exercise and stimulate wasted muscles.	Faradism daily. Jan. 10, 1883.
10	F.	31	Martha.	Dr. Duncan.	Extra-uterine fœtation.	To destroy fœtus by galvanic and faradic shocks.	Jan. 17, 1883. Unsuccessful.
10A	Do.	Do.	Do.	Do.	Do.	Second attempt to kill fœtus by electrolysis. Two electrolysis needles passed into tumour. Current from forty cells passed for six minutes.	Jan. 30, 1883. Unsuccessful.
	This case is reported at length by Dr. Duncan in this volume of the Hospital Reports.						
11	F.	17	Mary.	Dr. Gee.	Left hemiplegia.	To maintain nutrition and tone of muscles.	Galvanism. Jan. 29, 1883. Much improved.
12	M.	32	Harley.	Mr. Baker.	Gunshot wound to right fore-arm and hand.	To decide what movement remained to muscles, and where hand should be amputated.	Feb. 3, 1883. Both currents used. Fingers were found to be useless.
13	F.	34	Mary.	Dr. Gee.	Disseminated sclerosis.	To test electrical contractility of muscles.	Feb. 5, 1883.
14	F.	60	Martha.	Dr. Duncan.	Epithelioma of vulvæ.	Removed by galvano-cautery.	Feb. 6, 1883.
15	M.	54	Matthew.	Dr. Southey.	Right hemiplegia.	To test electro sensibility of affected side.	Feb. 7, 1883.
16	M.	49	Matthew.	Dr. Southey.	Paralysis of left arm.	To test electro sensibility.	Feb. 7, 1883.
17	M.	26	Abernethy.	Mr. Savory.	Admitted for supposed injury.	To test affected side.	Wasting and loss of galvanic contractility. Proved to be a case of essential paralysis of long standing.

18	M.	7	Pitcairn.	Mr. Willett.	Talipes. Infantile paralysis.	To test paralysed muscles.	....
19	M.	41	Mark.	Dr. Duckworth.	Spondylitis deformans rheumatica.	To test muscles of legs.	Feb. 24, 1883.
20	F.	19	Hope.	Dr. Andrew.	General spinal paralysis (?).	For treatment. Faradism to muscles of arms and hands.	Hysteria? Amenorrhœa.
21	M.	1.5	Matthew.	Dr. Southey.	Infantile paralysis.	Treatment. Galvanic bath.	At commencement almost complete paralysis of both legs. Much improved.
22	M.	45	Do.	Do.	Sciatica (right).	Treatment.	Galvanism to course of nerve. Twenty-five Leclanché cells for eight minutes daily. Recovered.
23	F.	12	President.	Mr. Smith.	Facial paralysis after removal of polypoid granulations from left ear.	Treatment.	Recovery.
24	M.	30	Henry.	Mr. Smith.	Inability to walk after compound comminuted fracture of left leg (one year).	To test muscles of ankle and leg.	Joint only stiff after long inaction. Muscles respond to electric current.
25	F.	39	Hope.	Dr. Andrew.	Injury to spine at a railway station.	To test whether there was any impairment of electrical contractility.	Marked difference between the two sides. Most likely accident injured spinal cord on left side. Improved.
26	F.	31	Do.	Do.	Lateral sclerosis.	Supposed on first admission that she might be malingering (neuromimetica).	Distinctive symptoms of lateral sclerosis were found to be present.
27	M.	33	Luke.	Dr. Gee.	Atony of bladder following local peritonitis.	Treatment. Unable to pass his water.	Improved slightly, but left the hospital of his own accord.

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Result and Remarks.
28	M.	41	Matthew.	Dr. Southey.	Loss of strength in legs.	Diagnosis.	No nervous disease demonstrated; loss of strength (more marked in legs) due to general impairment of constitution.
29	M.	32	Mark.	Dr. Andrew.	... ...	To test reaction of muscles.	Paralysis in proportion to wasting.
30	M.	22	Pitcairn.	Mr. Walsham.	Talipes varus (left).	Treatment	A wedge-shaped piece of bone had been removed by operation from tarsus.
31	M.	17	Abernethy.	Mr. Savory.	Division of right musculo-spiral nerve by accident.	To test muscles.	Commencing degeneration of muscles supplied by musculo-spiral nerve.
32	M.	18	Pitcairn.	Mr. Walsham.	Syphilitic necrosis of bones of skull; said to be losing power over legs.	Testing.	No impairment of motion or sensation discovered. Discharged.
33	F.	5½	President.	Mr. Walsham.	Infantile paralysis, left upper arm.	Muscles tested.	Some slight power of contraction still in pectoralis major and triceps.
34	M.	48	Pitcairn.	Mr. Willett.	Old dislocation of shoulder.	Testing.	No contraction produced in muscles of right arm by faradising brachial plexus above clavicle. Pressure on or laceration of brachial plexus from injury.
35	M.	32	Kenton.	Mr. Marsh.	Complained of acute pain in left ankle-joint. Malingering.	For treatment. Bore a current from forty cells through his ankle-joint with very little flinching.	Has done little work for two and a half years. Was in two clubs.

36	M.	35	Matthew.	Dr. Southey.	Facial paralysis.	Treatment.	Recovered.
37	F.	41	Hope.	Dr. Andrew.	Numbness of fingers. Loss of sensation in region of distribution of anterior crural nerve. Hyperæsthetic in other parts.	For testing.	Loss of faradic and galvanic contractility, most marked in forearm and legs.
38	F.	31	Do.	Do.	Locomotor ataxy (?).	Testing.	Muscles react normally to both currents. No impairment of sensation (C.C.C.>A.C.C.)
39	F.	29	Martha.	Dr. Matthews Duncan.	External piles. Proliferation of vulva and clitoris.	Removed by galvano-cautery.	... ...
40	F.	32	...	...	Lupus hypertrophicus.	Removed by galvano-cautery.	... ...
41	F.	38	Faith.	Dr. Southey.	Progressive muscular atrophy.	Testing.	... ...
42	M.	...	Mark.	Dr. Andrew.	Progressive muscular atrophy (?).	Testing and treatment.	Improved.
43	F.	22	Stanley.	Mr. Marsh.	Painful stump after amputation.	Treatment.	Hysterical. Cannot be certain whether treatment did any good or not.
44	M.	5 mos.	Hope.	Dr. Andrew.	Cerebro-spinal meningitis.	Testing.	... ...
45	M.	62	Matthew.	Dr. Southey.	Sciatica.	Treatment.	Recovered with five applications.
46	F.	40	Faith.	Do.	... ...	Testing.	... ...
47	M.	37	Abernethy.	Mr. Savory.	Right hemiplegia. Epileptic fits.	Testing before and after trephining. June 16 and July 12.	... ...

No.	Sex.	Age.	Ward.	Physician or Surgeon.	Complaint.	Reason for Using Electricity.	Result and Remarks.
48	F.	58	Hope.	Dr. Andrew.	Right hemiplegia.	Testing muscles.	The paralysis was slight.
49	M.	26	Colston.	Mr. Langton.	Injury to elbow implicating ulnar nerve.	To test region of distribution of nerve with a view to operation.	Loss of motion and sensation in all parts supplied by the ulnar nerve.
50	F.	30	Pitcairn.	Mr. Willett.	Pain in back.	... ...	... ...
51	M.	51	Martha.	Dr. Godson.	Caruncle of urethra.	Removal by galvano-cautery.	... ...
52	M.	10	Mark.	Dr. Andrew.	Increased excitability of muscles of leg.	Testing.	No disease.
53	M.	40	Rahere to John.	Mr. Smith and Dr. Church.	Rheumatic inflammation of spinal meninges.	Testing.	Ataxic gait, but most of the signs of locomotor ataxy were absent.
54	M.	18	Pitcairn.	Mr. Willett.	Divided flexor tendon of middle finger of right hand.	Testing.	No response of middle finger to electricity.
55	F.	50 ?	Stanley.	Do.	Injury to head. Facial paralysis and deafness on left side.	Treatment.	Improving.

The preceding list does not represent a tithe of the number of patients in the wards on whom electricity was used for one purpose or another during the year, but only includes those for whom my assistance was asked. Several patients, who had been treated by the house-surgeons or dressers, were referred to me to continue their treatment as out-patients.

In those cases in which electricity was used for treatment, I think I can show pretty fair success. The first case after my appointment was a woman who suffered from *paralysis* of the left leg *after confinement.* She was discharged almost well. The only case of *lead palsy* I had to treat as an in-patient improved under galvanism. One case of *hysteria* recovered; the other two did not improve. Of four cases of *facial paralysis*, two recovered; of one I was only asked to test the condition of the muscles, and the fourth case is still under treatment by the dresser. I had two cases of *retention of urine*, one in a woman under Dr. Matthews Duncan, who recovered complete control over her bladder after having had her water drawn off daily for nearly seven weeks. The other case was in a man who left the hospital of his own accord before he was cured, but he had slightly improved. The case of *extra-uterine fœtation* for which my services were required, I believe Dr. Duncan has reported at length in this volume of the Hospital Reports. I sent him my notes of the case for that purpose. Electricity was used four times in the form of galvano-cautery in Martha Ward with most satisfactory results. Dr. Duncan believes that galvano-cautery is especially suitable for operations about the female genital organs, as it is followed by much less pain than when the knife is used; and when the operation is not hurried, and the wire not too hot, it is not followed by any hæmorrhage. Of the four cases of *infantile paralysis* in my list, I was only asked to undertake the treatment of one. This case improved considerably. A second case was treated, after I had seen it once, by the dresser; and of the two other cases I was only asked to test the electro-excitability of the muscles. The two cases of *sciatica* recovered completely.

In the cases in which electricity was used in the medical wards for diagnostic purposes, it as a rule only corroborated the opinion which had been formed from other symptoms, but was most useful in determining cases of supposed or real malingering. But in the surgical wards, where there was paralysis of a limb or part of a limb consequent upon an injury, in some cases, I believe, electricity was of great use in determining, for instance, whether a nerve was completely divided or not, and in other cases in helping to arrive at a decision whether an opera-

tion should be performed. I had seven such cases of paralysis following an injury.

In the practice of this department, I have found my former medical and surgical experience of the greatest use, for I have been called upon to examine or treat cases of all descriptions; to galvanise the Eustachian tube and the vocal cords, and to pass a catheter-shaped electrode into the bladder. My services are often required, and perhaps more frequently with good results, by the department for diseases of women. I assist at operations with the galvano-cautery, and in those in which electrolysis is employed, so that, as far as my post of electrician is concerned, I may call myself a general practitioner. Among the out-patients perhaps I have found this experience the more useful, for patients are very readily transferred to the electrician for any symptom they may first name that under some circumstances might be relieved by electricity, such as weakness or inability to walk properly. I have had cases of rickets sent to me, and several cases in which I have been able to point out that some surgical treatment would do more good than electricity, such as the division of a tendon or the removal of a toe. In one case I discovered a brawny and enlarged condition of the left leg, due to a mass of indurated glands in the groin which pressed upon the femoral vein, and was a consequent of gonorrhœa.

For the first few months after my appointment the organisation of the department was under consideration. I therefore did not take under my charge the treatment of the out-patients, except a few cases I was especially asked to attend to. These I find amounted to seventy-four. I shall only give the number treated and the result, as far as I am able to state it, of some of the cases, noting those of more especial interest.

1. *Drop wrist* (thirteen cases).—Only one could be clearly traceable to lead-poisoning. Eight were from pressure on the nerve during sleep, several occurring while the patient was in a state of intoxication. Six of these cases improved. Of the four cases for which no cause could be assigned only one improved. It is impossible to give a very certain opinion as to the result of treatment. Several of the cases had improved considerably and then ceased to attend; I believe they were fairly on the road to recovery.

2. *Loss of power and pain in arms* (twelve cases).—Seven of these improved, and in three no benefit was derived. Of the cases which improved, several appeared to be associated with disorder of the menstrual function. One woman, aged 48, sent to me by Dr. Farre, who was passing through her climacteric

period, had had pain in both her arms, especially the left, for eighteen months, and had been unable to follow her employment as a needlewoman. After several months treatment with electricity she can now do needlework, and the pain has almost disappeared. This woman is still attending as an out-patient; she was induced to attend regularly for so long a time because she had faith in the remedy, and felt better after each application. My experience with these cases leads me to believe that they are certain to be relieved by treatment; and yet I think there is no doubt they suffer the pain of which they complain.

Electricity seems to be particularly useful in all those cases of vague pains and neuralgia which afflict women, and are often called hysterical, and certainly for which no obvious cause can be discovered. The pain appears to be caused merely by some functional derangement, and by no organic lesion, and the application of electricity produces that beneficial change which is required to make the organ or its nerves perform their proper function without giving rise to this undue pain.

3. *Facial palsy* (six cases).—Four cases improved. It was the same with these cases as with others; when they had slightly improved they ceased to attend. In two cases I did not get any beneficial result.

4. *Infantile paralysis* (eleven cases).—Six appeared to improve under treatment, five did not. Several that I only saw once I have not counted. The remark with which Sir William Gull commences his article "On the Value of Electricity as a Remedial Agent," in the Guy's Hospital Reports for 1852, is most applicable to these cases, and it shows the difficulty with which an out-patient electrical department has to contend. He says, with regard to the number of cases he has reported, "They would have been far more numerous had we been able to enforce upon our patients a more regular attendance; but after having carefully recorded the details of their history, progress, and present state, our labour has in more than half the cases been lost by their non-attendance, or by their attending so irregularly, or for so short a time, that no practical inference could be drawn."

5. *Enuresis* (nine cases).—Four were cured, and the other five improved, and would have been cured, I believe, if they had not, from one reason or another, ceased to come. One woman was pregnant, and I therefore advised her to desist from coming, dreading that I might bring on a miscarriage. One young girl was brought up from the country twice. After the first galvanising she was much better, and I suppose after the second her mother thought there was no more necessity for treatment.

In the case of one boy I declined to continue the treatment as he was covered with scabies. I am now treating the scabies. One woman who had been in "Martha Ward" with pyuria, and in whom Dr. Duncan had forcibly dilated the urethra so as to introduce his finger for exploration of the bladder, was troubled afterwards by incontinence. The urethra had been so much stretched that it could not recover itself, and the water was always dribbling away. She had been in this uncomfortable state for several months when she was sent to me, and improved under the electricity rapidly. The sphincter was recovering its tone, but she has ceased to attend for the present, as matter had collected again in the abscess which communicated with the bladder, and which in the first instance was the cause of pus appearing in her urine. Of the cases that were cured, six or eight applications of the galvanic current were sufficient. One young man of 19 had wetted his bed from infancy, and had been discharged from the militia on account of his infirmity. One woman sent to me by Dr. Godson had incontinence of urine when in an erect position; this was due to a prolapse of the posterior wall of the bladder and the anterior wall of the vagina, which dragging upon the urethra slightly opened it. The prolapse had been the result of previous difficult labours. The electricity seemed to restore tone to the muscular walls of the vagina and bladder, and she was discharged quite well.

I have had no cases of amenorrhœa sent to me expressly for treatment, so cannot confirm the good opinion formed by Dr. Golding Bird[1] and Sir William Gull[2] as to the effect of electricity in relieving this condition, but several cases I have had to treat in which amenorrhœa was present. The catamenia appeared during the course of treatment, and was marked in several instances by a relief of the paralytic or hysterical symptoms.

6. *Duchenne's paralysis* (one case).—Did not improve, but got gradually worse; in fact, the child, who was about eight years old, became so very weak that I advised the mother not to bring him. He attended for many months, and said he felt better and stronger after each attendance, the relief lasting over the succeeding day.

7. *Paralysis of the serratus magnus* (one case).—Did not improve. Patient only attended a few times.

8. *Paralysis from division of nerve* (seven cases).—One of these cases was only sent to me to test the muscles, when I was able to show that the median nerve had been completely divided

[1] Guy's Hospital Reports, 1841, p. 114 seq.
[2] Ibid., 1852-53, p. 137 seq.

just above the wrist, and the ulnar most likely also partially divided. The other six patients all expressed themselves as benefited by the electricity; but I only saw marked improvement in one.

9. *Paralysis of deltoid* (one case).—This was produced by a fall on the shoulder. The patient was a sailor, and the accident had taken place on board H.M.S. *Superb* on January 22, 1883. When the patient came to me in August, the deltoid was much wasted. He now (October) can raise the arm with ease and the muscle is recovering its bulk.

10. *Sciatica* (two cases).—Both cured.

11. *Tic douloureux* (one case).—This case was sent to me by Mr. Coleman. The pain had been of a most persistent character, and nearly everything had been tried to relieve it but electricity. He improved from the first time he was galvanised, and as he has now ceased to attend, I believe he is cured.

I have made the above selection of the most interesting cases which occurred among the out-patients, but I had numerous others of weakness and numbness, and loss of power in different parts of the body, together with one lunatic and a sprained ankle.

ON THE TREATMENT OF CERTAIN CASES OF DELIRIUM WITH INSOMNIA.

BY

W. MORRANT BAKER.

All who have had much to do with cases of delirium tremens, especially as it occurs after injuries, will be able to recall instances in which sleep cannot be procured by any of the ordinary remedies. Opium or morphia, whether by the mouth or by subcutaneous injection, chloral, bromide of potassium, and all other internal remedies, are powerless; while the application of ice to the head or the cold douche is either inapplicable or fails to produce the desired effect.

Under such circumstances I have been in the habit, for some years past, of occasionally combining two methods of treatment, either of which, by itself, would be insufficient. First, chloroform has been administered until the patient is fully but not very deeply under its influence; and then morphia in a moderate dose, say a sixth to a third of a grain, is injected subcutaneously; the inhalation of the chloroform being continued until time has been given for the absorption of the morphia.

The plan is so simple that I cannot doubt it has been often employed by others. But I cannot remember seeing any account of it; and this may be my excuse for drawing attention to it. I would lay stress upon the following points:—(1.) That only a very small minority of cases of delirium are so intractable by ordinary means as to require the treatment referred to; and (2.) the plan should be carried out with due caution. It is not requisite or advisable to administer chloroform for any long time or to inject the morphia in any other than very moderate doses.

Many years have elapsed since I first employed this method, and I have not preserved notes of the earlier cases. The first

that I can remember occurred about twelve years ago, when Mr. Young, now of Sevenoaks, was house-surgeon at St. Bartholomew's Hospital. It was that of a man of middle-age, who had been admitted on account of fractured leg and had been subsequently removed to the Casualty Ward on account of the noisy delirium which came on soon after his admission into the hospital. The usual remedies had been tried without any good effect; and for many hours the patient lay shouting incoherently and violently straining, with more or less success, to remove the splints and bandages from his broken leg. The impression given me on seeing the case, as I did for the first time at this stage, was that the man would die if sleep were not soon procured; but having no detailed notes of the case, I cannot say for how many hours the insomnia had lasted. At my suggestion, Mr. Young administered chloroform, and while the patient was under its influence, injected a moderate dose of morphia subcutaneously; the inhalation of chloroform being continued for a few minutes and then discontinued, but renewed once or twice when the patient showed any sign of awaking. Within a short time (I think about a quarter to half an hour), the patient was fast asleep and remained so for many hours, awaking refreshed, and, as far I can remember, giving no further trouble.

For the notes of the two following cases I am indebted to my late house-surgeon, Dr. James Harper.

Case II.

A woman (P. P.), aged 39, was admitted into St. Bartholomew's Hospital, under the care of Mr. Morrant Baker, on the 9th February 1883, on account of a simple fracture of the tibia. Two days afterwards, having had no sleep since her admission, she became chatty and then excited and delirious, with hallucinations of the kind common in delirium tremens. Repeated doses of bromide of potassium and chloral were administered during the day, and in the afternoon and again in the evening morphia was injected subcutaneously. These measures were, however, quite ineffectual, so far as procuring sleep was concerned, and on the following day she was removed to a separate ward, and an extra-nurse was appointed to watch her.

In the afternoon of this day (the third since the patient's admission into the hospital), no sleep having been obtained, chloroform was administered and gr. $\frac{1}{4}$ of morphia was injected subcutaneously. The pulse remaining good, the inhalation of chloroform was continued for about a quarter of an hour and

then gradually discontinued. After this the patient slept soundly, and remained asleep for twelve hours, excepting the few minutes during which she was occasionally roused for food.

On the following day, February 13, she was much better, but as there was still some restlessness, a dose of bromide of potassium (gr. 30) and hydrate of chloral (gr. 20) was given; and as this had not much effect, gr. ¼ of morphia was injected subcutaneously a couple of hours afterwards. This had the desired effect, and no other sedatives were required. From this time she did well, and had no return of delirium.

Case III.

A man (J. W.), aged 39, was admitted into St. Bartholomew's Hospital, under the care of Mr. Morrant Baker, March 1, 1883, on account of compound and comminuted fracture of the tibia and fibula.

On the afternoon of the same day he began to exhibit signs of delirium tremens, being talkative and tremulous. Late in the evening there was slight delirium. Brandy and opium were given in the afternoon without any good effect, and in the evening gr. ⅓ of morphia was injected subcutaneously, but without procuring sleep.

As the patient was steadily getting worse, chloroform was administered by Dr. Harper, and while the patient was under its influence gr. ⅓ of morphia was injected subcutaneously. It was found impossible to keep him long under the influence of chloroform as the pulse became weak and irregular; he was under the influence of chloroform, therefore, for only about ten minutes. The effect, so far as it was, was very good. The patient slept for two hours, and on his waking in the middle of the night, half an ounce of brandy and ℥15 of tr. opii were administered. After this he slept for two or three hours more, though not so soundly.

March 2.—On this, the day after admission, the delirium continued, and the patient slept but little during the day. Unfortunately the treatment by chloroform could not be repeated on account of the very broken-down condition of the patient. The administrator of anæsthetics found the pulse so weak that he did not consider it advisable to administer chloroform, and the usual remedies were therefore continued as far as it seemed safe under the circumstances. The patient did not rally, however, to any extent, and on the third day after his admission he died—the delirium continuing to the end.

The only good sleep which he had was after the administration of the chloroform, and the subcutaneous injection at the same time of morphia.

Case IV.

For the following note I am indebted to my late house-surgeon, Dr. Oscar Clark.

A flour-porter (F. D.), aged 42, was admitted into St. Bartholomew's Hospital, in Mr. Morrant Baker's absence from town, under the care of Mr. Shuter, on August 20, 1883, having fallen off his cart while unloading flour-sacks. He fell on his head, twisting his neck under him. As there was considerable pain on any movement of the neck, though there was no symptoms of fracture of the cervical spine, he was treated for precaution's sake with sand bags on either side of his head and a flat mattress with no pillow.

The pain in the neck rapidly got well, and on August 23, there was only a little stiffness.

Suddenly, in the night of the 23d, the patient awoke, complaining of bad dreams, and spoke incoherently. A subcutaneous injection of gr. $\frac{1}{4}$ of morphia was given him, and he slept soundly afterwards.

On the following day he spoke naturally and was quiet, but slept badly that night, and was again somewhat incoherent.

On the following day (August 25) he grew restless and would get out of bed; and in the afternoon he became so troublesome that it was necessary to restrain him by straps. Chloral and bromide of potassium were given regularly.

In the evening of the same day, as he refused to take any medicine, morphia was given subcutaneously, and three injections of gr. $\frac{1}{3}$, gr. $\frac{1}{3}$, and gr. $\frac{1}{2}$ were given. After each injection he was quiet for a few minutes, but soon roused up again and became more violent.

By this time he had become very violent indeed, shouting so loudly that he could be heard all over the hospital, and at last he was furiously maniacal.

His condition at this time was very serious. He was extremely exhausted and was bathed in perspiration. The pulse was rapid and small. He had taken little or no food.

Chloroform was now administered by Mr. Colville, several assistants being required to hold the patient down for its administration. He very rapidly, however, came under its influence, not more than a drachm and a half of chloroform being used. The pulse somewhat improved, but the breathing

became very slow (the rate being only ten respirations per minute), though not stertorous. As he had had three subcutaneous injections of morphia so recently, none was now given.

The patient was now in a deep sleep, and slept soundly for twelve hours, when he was roused for food. After this he slept again.

No further trouble ensued. Though at first somewhat confused, the patient soon recovered his memory, and had no return of delirium. He left the hospital a few days afterwards.

ABNORMALITY OF THE COLON: A CAUSE OF UNSUCCESSFUL COLOTOMY.

BY

C. B. LOCKWOOD.

Reference to the statistics which are published in these Reports show that the operation of colotomy is not very frequently performed. During the last five years 16,030 surgical cases were admitted into the wards of St. Bartholomew's Hospital. Nineteen of these patients underwent colotomy. The operation was fatal in twelve cases. Twice the great intestine could not be found. Mr. Willett operated on each of these occasions, and he has very kindly permitted me to make use of them. Owing to the fact that no post-mortem could be obtained in the first case (in which the left loin was incised), the cause of the failure could never be ascertained with certainty. In the second case the post-mortem showed that the right colon was absent, and could not possibly have been reached by a lumbar incision. Since this occurred Mr. Thomas Smith has also been unsuccessful in finding the colon, and the failure was afterwards found to be due to an absence of the colon from its usual position. It is a curious coincidence that out of thirteen cases which proved fatal after colotomy, in two the colon was absent from the lumbar region. Although diligent search has been made, and many fatal cases of colotomy have been inquired into, no other cases have been found in which the colon failed to be discovered, owing to what is probably congenital abnormality. Possibly some have failed to be recorded owing to the fact that abnormalities of the intestines have not been well understood or their importance recognised, and perhaps because operators have not many inducements to publish their failures. The case which was under the care of Mr. Willett presents so many points of interest that it is proposed to describe it at some length, and afterwards to discuss it along with the others.

Having been Mr. Willett's house-surgeon when D. S. was admitted, every opportunity was afforded to watch the progress of his case. The patient was a tailor, fifty-seven years old, stout and vigorous looking. When admitted into Luke Ward under the care of Dr. Gee, he did not appear to be suffering acutely. His face was pale, but with a natural expression. He came to the hospital because he had a pain in the lower part of his abdomen, and was unable to pass anything from the bowels. His health seems to have been good up to November 6. After drinking all that day, he asserts that he fell against the corner of a chair, and then heavily upon the ground. The corner of the chair, he says, struck him near the anus, and he was greatly shaken by the fall. Before this occurrence his bowels seem to have been "pretty regular," although he remembers that fourteen years before he had suffered severely from pain in the abdomen and constipation. Upon November 6, the day of the accident, he had an evacuation as usual, but the day after the fall, November 7, there was pain about the umbilicus, and his bowels were only slightly moved. The pain in the abdomen got worse, and the next day, November 8, vomiting began, which never ceased until his death. From this date, November 8, until the time of his admission, November 14, the history is somewhat obscure, but he asserts that he had fairly solid motions upon November 9th and 10th, scanty liquid motions and flatus upon the 11th and 12th, and then nothing until the 14th, when flatus passed again. He had never passed any blood. It is therefore evident that, if this history is true, the patient at the time of his admission had passed very little from the bowels for about six days, and nothing for two. Dr. Gee's examination did not disclose anything of importance except as regards the abdomen, which was distended but flaccid; there was tenderness upon pressure everywhere, amounting to pain in the regions below the umbilicus. The surface was uneven, owing to a protuberance in the right hypochondriac region and a rounded transverse ridge which crossed about the umbilicus. There was a firm elongated mass in the left iliac fossa, slightly tender on pressure. Both loins were dull when percussed, but became resonant after a change of position. There was also resonance over the protuberance in the right hypochondriac region, and in the neighbourhood of the mass in the left iliac fossa. There were no signs of hernia. The finger introduced into the rectum revealed nothing. The day this examination was made the condition of the patient, although serious, was not critical. His temperature both morning and evening was 96.8° F.; his pulse 92, and not betraying any feebleness. Urine had been passed, having a sp. gr. of 1027, and devoid of albumen. The actual quantity was

not observed, but the note of November 17 remarks that plenty was passed. The symptoms which the case presented after admission were those of intestinal obstruction. From the 14th to 18th of November nothing was passed from the bowels. The vomiting, which, he says, began on November 8, never ceased; unfrequent at first, and not stercoraceous, it became at last a constant annoyance and fæcal in character. The abdomen gradually became more tense, and the coils of small intestine visible externally. At first the intestines exhibited vermicular movement, but on the 18th this failed to be seen when they were struck. The abdomen was tympanitic, and there was a very clear bell sound in the right hypochondriac region. The man himself was pale and haggard, and suffered great mental anxiety, complaining of increased pain and tension in the abdomen. During the whole course of the complaint the temperature remained below normal, and there were no rigors. As weakness and exhaustion increased, the pulse became feeble and more frequent.

The treatment at first was expectant. Sedatives were given every fourth hour until the pupils became contracted; this did little towards the relief of pain. Copious enemata were exhibited on the day of admission, November 14, and afterwards on the 16th and 17th. Great importance is attached to the last operation. The enema consisted of two pints of thin gruel and two ounces of spirits of turpentine. A long stomach-pump tube was used by Mr. Reid, the house-physician, for the purpose of giving the injection and exploring the rectum and large intestine. Nearly two feet of the tube were passed into the intestine, and nearly the whole of the enema was injected. One and a half pints were retained for about thirty minutes, and then came away stained, and containing a small fæcal lump about as big as a nut. During the night of the 17th the patient passed a liquid motion of dark brown colour. There was no solid matter in the motion. About mid-day on November 18th, a similar motion was again passed, but without the slightest relief. The abdomen became more tense, the vomiting more persistent and more fæcal, and there was a constant hiccough. The day after the enema was given, it was noticed that the vomit had a faint but distinct odour of turpentine. Between 4.30 P.M. on November 18th, and 12.30 P.M. November 19th, nine pints of yellow stercoraceous liquid had been vomited up, and during that period the patient had drunk six pints of fluid. During this period he had passed only a few ounces of urine, very dark coloured, and having a sp. gr. of 1038. Dr. Gee called Mr. Willett in consultation on November 18th, and the question of operative interference was anxiously discussed. All the usual symptoms of intestinal obstruction were

present, but the fact that the patient had passed two liquid motions since he had been under observation caused a certain amount of doubt. That the obstruction was not complete was also made possible by the presence of turpentine in the vomit. It will be remembered that the day after the enema containing it was given, the vomit had a distinct odour of turpentine. It was not thought likely that the drug had been absorbed into the circulation and excreted again by the blood-vessels of the stomach. However, the symptoms were so grave and the patient's condition so critical, that it was decided that unless relief occurred by mid-day, November 19th, colotomy should be performed. All the symptoms increased and there was no favourable indication for further delay, so the operation was performed on the right side. The presence of a tumour in the left iliac fossa and the distended condition of the transverse colon might have been considered evidence that the operation would have been successful if performed in the left side. This probability seemed to be outweighed by the fact that a stomach-pump tube had been passed for nearly two feet into the lower part of the intestines, presumably into the descending colon.

The usual incision was adopted to reach the gut; this consisted in a cut about four inches long, parallel to the last rib, and midway between it and the crest of the ilium. After cutting through a thick layer of fat and the muscles, the quadratus lumborum was found, but the colon could not be discovered in front of it. Relief being imperatively demanded, it was deemed advisable to open the peritoneum and draw out a portion of small intestine. After this had been done, the operation was completed in the usual way. The patient was taken back to Darker Ward, and as soon as he recovered from the shock of the operation and the chloroform, suffered the greatest agony. There was a considerable amount of fæces discharged from the wound, but the abdominal pain was so intense that the patient was unable to endure it. Opium was freely exhibited, but without effect. Death occurred about four hours after the operation.

Twenty-four hours afterwards, I performed a post-mortem examination in the presence of Mr. Willett. The body was exceedingly fat, and decomposition had already begun. The abdomen only was opened, in accordance with the wishes of his friends. The intestines and peritoneum were congested and smeared with lymph. The peritonitis was general. There was extravasation of fæcal matter in the upper part of the abdomen. The right colon was quite absent, the cæcum being situated beneath the liver in the right hypochondriac region. Its walls were black and gangrenous, and there were two perforations which had per-

mitted the fæcal extravasation. The large intestine extended from the cæcum across the abdomen to the splenic curve in the usual manner. The descending colon had a partial mesentery, and ended in the left iliac fossa in a solid mass as large as a cocoa-nut. A curious diverticulum extended from the concavity of the splenic curvature, and ended below in this tumour. This diverticulum was mistaken at first for a small and contracted colon. It possessed appendices epiploicæ, but its cavity was very narrow, and appeared to have a mucous lining of a reddish colour. The mass in the left iliac fossa had various tracts or passages running through it. It was of a firm consistence, and apparently not very vascular. No enlarged lymphatic glands were observed, but there was in its vicinity a quantity of what appeared to be extravasated blood. The sigmoid flexure was not measured, but was considered at the time to be as usual. Owing to the great obesity of the subject, the decomposition, and the fact that an artificial light had to be used during the examination, more minute details were not ascertained, but it was proved that a portion of jejunum had been brought into the right loin and opened there.

The consideration of this case seems to consist of a review of, first, the intestinal abnormality; second, post-mortem appearances; third, the operation; fourth, the clinical history.

With regard to the first point, it cannot be said that intestinal abnormalities are very common, but a winter session never passes without the large intestines being discovered in some way abnormal. Already (Session 1883–84) the right colon has been found incompletely descended and attached by a mesentery. In the same body the descending colon was abnormal, being contracted and quite close to the middle line. In another place [1] a number of cases were brought together in which the large intestines did not occupy their usual position. In this paper it was endeavoured to be shown that misplacements of the cæcum and colon were due to arrests of development. It is recognised that the part of the alimentary tube which afterwards becomes colon is at first straight, and extends from the pelvis to the rudimentary cæcum. The cæcum at this period is situated about the centre of the abdomen, and together with the colon is attached to the spine by a mesentery. As the intestine grows it travels round the peritoneal cavity, moving the cæcum from the umbilicus to the left hypochondriac region. From the left hypochondriac region the end of the large intestine passes to the right; that is to say, beneath the liver. From this position the remainder of its course consists in its descent into the right iliac fossa. Numerous cases

[1] See paper by author in Brit. Med. Jour., September 23, 1882, No. 1134, p. 574.

were quoted[1] to show that the cæcum might be arrested in any part of its course, either at the umbilicus, beneath the stomach, beneath the liver, or during its descent into the iliac fossa. Evidently the abnormality in this case was one of those in which the cæcum remained under the liver. In most cases of arrested development of the intestines, bands of adhesions have been found which may have been the cause. It is possible that the existence of these bands of adhesions may be explained when the observations of Simpson on intra-uterine peritonitis are remembered. In the case under consideration, no obvious cause was discovered, but owing to the circumstances adhesions might easily have been overlooked.

The diverticulum, which extended from the splenic flexure of the colon to the tumour in the iliac fossa, where it was lost, is so unusual and so rare, that no explanation has been offered which accounts for its existence.

Cases in which the cæcum and ascending colon have been found double are not unknown,[2] and it may be mentioned that a double cæcum is the normal condition in certain animals—manatee, two-toed ant-eater, &c.[3] No cases can be found in which the descending colon was double, and it is possible that the abnormality mentioned was due to a diverticulum formed in some unaccountable manner.

The peritonitis was the most pronounced of the post-mortem appearances; it was evidently due to the fæcal extravasation which had taken place owing to the perforation of the cæcum. It will be remembered that the peritonitis was not mentioned as having being diagnosed before the operation. The only symptoms which could have caused its presence to have been suspected were the pain, hiccough, and on the 18th day the total absence of vermicular movement. It seems quite clear that the peritonitis was due to the escape of intestinal contents, and not to the operation.

Coupland and Morris[4] in their paper point out, that in cases of obstruction in the large intestine, perforation is seldom or never at the seat of stricture; it occurs in the cæcum. Several reasons are given why this should be the case. The shape of the cæcum as a *cul-de-sac*, its fixity, dependent position, and that it is the place where two currents meet, are all adduced as reasons why it should bear the stress of the retention. Lastly, they say that being placed between the abdominal and iliacus muscles, the

[1] See paper by author in Brit. Med. Jour., September 23, 1882, No. 1134, p. 575.
[2] Meastel, Tab. Anatomico-Path., tab. xiii. fig. iv. p. 13.
[3] Mivart, Elementary Anatomy, p. 448.
[4] Coupland and Morris, Paper read at Brit. Med. Assoc., March 1877.

gut is liable to be chafed. Evidently, in the case described in this paper, many of these conditions are absent. The cæcum was not fixed, dependent, or pressed upon by the iliac or abdominal muscles. Its shape as a *cul-de-sac* or as the place where two currents met was unaltered. Dr. Messer[1] says the walls of the cæcum are more easily affected by the distending presence of accumulating fæces, which ultimately results in ulceration. But it appears as if some peculiarity in the structure of the walls of the cæcum itself must be sought for as the cause of its liability to ruptures, and it seems probable that this peculiarity consists in the very large amount of lymphoid tissue which is present. It may be further observed that the walls of the cæcum are not strengthened to the same extent as other parts of the large intestine by encircling bands, and that in this another source of weakness may be found. Whatever may have been the cause of the gangrene and giving way of the cæcum in this case, it could not be attributed either to the *dependent* position of the cæcum or to the possibility of its having being pressed between the abdominal muscles and the iliacus.

The features of the greatest interest as far as the operation is concerned are the absence of the colon from the loin, and the means which were had recourse to when the gut could not be found. The surgical bearing of the intestinal abnormality would hardly appear worthy of consideration if this was the only case of colotomy in which malposition had occurred. It has been mentioned before that Mr. Thomas Smith recently failed to find the right colon under almost similar conditions. Owing to what seems to have been a congenital abnormality the great gut was completely absent from the right lumbar region.[2] It has been observed before that colotomy is not a very frequent operation, and evidently abnormalities of the colon are not very common. It is therefore a matter of no surprise that many cases of such a rare coincidence cannot be found. None are mentioned even in the exhaustive essays of Cæsar Hawkins[3] or Benjamin Phillips.[4] The most that could be said as to the practical bearing of congenital malformation of the colon upon the operation of colotomy might be, that the fact of its occasional occurrence should be taken into consideration to the same extent as abnormalities of arteries are when the question of their ligature is considered.

[1] Path. Trans., vol. xi. p. 100.

[2] This case will be more completely described in another place.

[3] Cæsar Hawkins, Contributions to Pathology or Surgery, 1874, vol. i. p. 100, et seq.

[4] Med. Chir. Trans., vol. xxxi. p. 3, et seq.

It may be remembered that the selection of the right side as the seat of the operation was influenced by the fact that a stomach-pump tube had been introduced two feet into the rectum. It was naturally thought that the tube had in all probability passed the mass which was felt in the left iliac fossa, and that therefore this was not the seat of the obstruction. Without laying any stress upon this particular instance, it seems worth mentioning how very variable the length of the sigmoid flexure is. A great many opportunities have been taken to measure the length of this part of the alimentary tract in subjects brought for dissection. For the purpose of measurement the flexure was considered to begin about the border of the left iliac crest and to end at the brim of the pelvis. The usual length was found to be about 22 inches. The longest was about 28 inches, the shortest 6 inches. J. L. Amussat gives[1] from 18 inches to 2 feet or 2½ feet as the usual extent of the sigmoid flexure It was said in the notes of the post-mortem that the length of the sigmoid flexure of D. S. was not ascertained. If it had been of the usual length, it might easily have contained all the stomach-pump tube. If unusually short, there still remains the possibility of the tube having found its way through one of the tracts found in the tumour. In any case, the variable length of the sigmoid flexure introduces a great element of uncertainty in the case of measurements made with tubes. The same reasoning evidently applies when the quantity of fluid injected is taken to assist in indicating the position of strictures,[2] and I greatly regret that it has not been possible to carry out Mr. Morrant Baker's suggestion and give statistics of the capacity of this portion of the intestines.[3]

When, in the case under consideration, it was found impossible to discover the colon in the loin the usual expedient was had recourse to. A portion of the small intestine was drawn into the wound and opened. Whatever may be the cause, this proceeding is so speedily and invariably fatal, that it may be questioned whether it is of any use attempting it. It was followed by an untoward result in Mr. Willett's case, and Mr. Lawson has kindly informed me that it was fatal in the case of a woman upon whom he operated. Coupland and Morris, in their paper, recognise this fatality, and suggest that when the colon cannot be found in the loin the small intestines should be opened in the front of the abdomen. Although it has been stated[4] that recovery does not

[1] Mémoire sur la Possibilité d'établir un Anus artificiel dans la Région lombaire sans Pénétrer dans la Peritoine, Paris, 1839, p. 14.

[2] Brinton on "Intestinal Obstruction," 1867, edited by Dr. Buzzard, pp. 81, 82.

[3] See Brinton, *ibid.*, pp. 24 and 25, for statistics of capacity.

[4] Cæsar Hawkins, quoted by Jeremiah M'Carthy, Med. Chir. Trans., vol. lv. p. 267.

take place when an artificial anus is made in the small intestines, Mr. M'Carthy describes a case fatal after forty-eight days,[1] and complete recovery took place in two cases recorded by Mr. Maunder[2] and Mr. Wagstaffe.[3] In their hands the operation of gastro-entrotomy was not complicated by a previous incision into the loin and the disturbance of peritoneum which a prolonged attempt to find the colon is likely to produce. No case has been met with in which, after failing to find the colon, the operator has opened the small intestine in the front, but it may be thought an alternative worth taking into consideration. It would be quite impossible within the limits of such a paper as this to discuss the advisability of the more heroic course which an exploration of the abdomen would present.

Some of the clinical features of the case of J. D. have been commented on. The great import of the cessation of the peristaltic movements was fully borne out by the results of the post-mortem examination. The cause of the sudden onset of the obstruction was not made apparent. The notes show very clearly that as long as the symptoms were not acute a usual quantity of urine was passed; when the vomiting became persistent, only a few ounces, very dark coloured, and having a specific gravity of 1038 was passed. It is an old observation that when the obstruction is in the small intestine, *i.e.*, acute, very little urine is secreted; that when the obstruction is in the large intestine, *i.e.*, chronic, the usual quantity is passed. It has been endeavoured to account for this by saying that in the acute cases so much fluid is vomited up that little is left to be excreted by the kidneys. The clinical history which has been recounted certainly bears out this view, for on November 18 and 19 the patient drank six pints of fluid and ejected nine; on these days a few ounces of dark and concentrated urine were passed.

In conclusion, I beg to express my thanks to Mr. Willett for having kindly read the above notes before they went to press, and for having made several suggestions.

[1] Med. Chir. Trans., vol. lv. p. 267.
[2] Clin. Soc. Trans., vol. ix. p. 102.
[3] St. Thomas's Hospital Reports, New Series, vol. iv. p. 181.

A NEW SCHEME FOR THE CLASSIFICATION OF DEFORMED PELVES.[1]

BY

WALTER S. A. GRIFFITH.

I. *Normal.*
   Varieties.
II. *Abnormal.*
   A. Teratological, or of development.
   B. Pathological, of growth or maintenance.
A. Abnormal development.
   (1.) *Variation.*
      Æquabiliter justo-minor.
      Æquabiliter justo-major.
   (2.) *Imperfect development.*
      Nægele.
      Robert.
      Congenital dislocation of femurs.
      Male type.
B. (*a.*) *Abnormal growth.*
   (1.) *Modified* (*early*) *by disease of pelvic bones and pressure.*
      Rickets.
      Hip-disease.
      Nægele (one form ?).
   (2.) *Modified* (*later*) *by pressure* (*no obvious disease of pelvic bones*).
      Flat, Scoliotic, Kyphotic } *non*-rachitic.

[1] This, whilst equally applicable to the deformities of both sexes, is, in this paper, intended only for obstetrical purposes. The numbers refer to the specimens in the Hospital Museum.

B. (*β.*) *Abnormal maintenance.*
(1.) *Modified* (*after complete growth*) *by disease of the pelvic bones and pressure.*
Mollities.
Osteitis deformans.
(2.) *By overhanging tumours or vertebræ obstructing the inlet* (*group Obtecta*).
Spondylolisthesis.
Spondylolizema.
Exostosis or other tumours.
(3.) *By tumour of the pelvis obstructing the cavity.*
(4.) *By fractures of the pelvis.*

I think I need offer no apology for attempting a new classification of the various forms of pelvic deformity, so long as it be founded on some well-considered plan which shall embrace the results of the latest researches, and which may be capable of extension as the increase of our knowledge shall require.

At the outset we are met by a great and a very incompletely investigated problem, which in the course of years I hope to be able to take some part in elucidating.

What is a normal pelvis?

The most satisfactory answer to this at present may be made by taking the converse of Dr. Duncan's definition of a deformed pelvis, namely, "when neither by its shape or size does it exert during parturition any injurious influence on mother or child." For clinical purposes this is sufficient, but for the comparisons and classifications of varieties it is not. We may easily discover what any authority believes to be normal by taking the measurements which he gives; but no two authors exactly agree, and this leads us to the supposition either that there is no such thing as a normal pelvis, or that within certain limits a good many varieties are normal; and taking this view, I propose to form a first group of *normal* pelves which shall include certain slight variations, which, so far as we know, do not exert any injurious influence on mother or child during the act of parturition.

Whilst considering normality we must not confine ourselves to a one-sided view of the case, a view which one gathers from most text-books and some common examination questions, but which is not given in the definition above, namely, that any strict measurements of a pelvis are normal. It is not usually the absolute length of a diameter that is normal, but the length relative to that of the corresponding diameter of the child's head which has to come through it; and such a question as the following, which is frequently asked in examinations, is entirely misleading and one-

sided, "What is the smallest size of pelvis that a living child can be delivered through at term?" The only answer to this is, "That it depends upon the size of the child."

But in spite of this, I think that though we shall have to depend chiefly for our *knowledge* of normality on the definition given above, for its estimation and comparison with abnormal forms we must rely on absolute measurements; and I have little doubt that it will be found that normality differs in different races, just as height does, though not necessarily in proportion to height, and that the present mixed European races have somewhat larger pelves and babies than the unmixed natives of isolated districts. Nos. 3102B–3138 are examples of normal pelves.

We then come to consider abnormal pelves, and the great division into teratological and pathological, which promises at first to be so satisfactory, proves not to be so the more carefully we investigate the details of causation.

Teratology, as a separate branch, is almost a new science, and at present, in most text-books on medical subjects, is mixed up with pathology. At present it will be distinctly to the advantage of both to be taken separately until extended knowledge can show the pathological cause of teratological conditions.

Lowne, in the introduction to the teratological catalogue of the museum of the Royal College of Surgeons, says: "Teratology has for its domain the consideration of abnormal conditions of development. . . . Hence, by common consent, all the diseases peculiar to intra-uterine life, together with certain abnormal congenital conditions of growth, producing dwarfs and giants, have been assigned to the teratologist."

This class abstracted, leaves two others for the pathologist—abnormal growth and abnormal maintenance—and these three classes form the principal divisions of this scheme; and though this plan may not be satisfactory to the purely practical obstetrician, yet I think it cannot fail to meet with the approval of any careful investigator.

The simplest form of abnormal development is *variation* to a degree beyond that which by our definition we may consider to be normal; an aggregation of numberless minute variations which, being carried through successive generations, are at length recognised, and are said to be *hereditary*, or having skipped one or more generations and then recurring, are said to be due to *atavism*.

Instances of these are the

Pelvis æquabiliter justo-minor, { 3109, 3106, 3104A, 3107, 3108.

„ „ justo-major, 3102C.

Any of these or of the following teratological series are liable to

subsequent disease or injury, and these, combining pathology with teratology, interfere with the simplicity of this classification.

The following specimens illustrate this combination :—

Scoliotic justo-minor, 3110.
Scoliotic justo-major, 280, 1114.
Kyphotic justo-major, 3123.

The next class contains the imperfectly developed pelves, of which the Nægele 3125, 3126, 3127, Robert 3124, and the imperfect pelvis which is characterised by congenital dislocation of the femora, 1050, and the male type which occurs sometimes with congenital absence of the generative organs, 3104.

We now come to the pathological series, and the first group (*a.*) must be divided into two: (1.) those modified during growth (*early*) by *disease* and *pressure*, and (2.) those during growth (*later*) by *pressure* without obvious disease.

(1.) Contains the great rachitic group, and occasional instances of deformity from hip-disease, and perhaps rare instances of the Nægele deformity.

(2.) Contains an equally large, if not greater, group of *non*-rachitic, flat, scoliotic (or oblique) and kyphotic pelves.

The rachitic group presents several well-marked varieties, the conditions causing which are fairly understood.

There is the simple flat variety, generally much deformed ; the conjugate, varying in length from one to three inches. Almost all much flattened pelves belong to this group, and the patient having other well-marked signs of rickets, the condition is easily recognised, 276, 277, 3118, 272. (No. 272 should be an oblique flat pelvis, but the great spinal curvature is apparently compensated by the greater deformity of the leg on the same side.)

The next common variety is the oblique flat pelvis, the sacrum being tilted over to one side (usually the left) in consequence of spinal curvature, 3128, 3119, 3120, 275, 273 ; or, as is believed, from unequal deformity of the legs, as in a specimen I recently obtained from the post-mortem room and exhibited at the Obstetrical Society, of which the following is a brief description :—

" An oblique rachitic pelvis, the obliquity being probably due to the unequal length of the legs (there being no spinal curvature). The sacrum is tilted to the left side, and the left leg was one inch shorter than the right and more distorted.

" From a nulliparous woman, æt. 48."

No. 279 is apparently another specimen of the same kind.

All rachitic pelves should apparently be placed with the justo-minor group, but their small size is the natural result of a disease

which interferes with their growth as well as leads to their distortion; but, as I have stated before, rickets may attack a justo-minor pelvis.

Another variety of rickety distortion is the pseudo-osteomalacia pelvis of Michaelis, of which we have as yet no specimen.

Nos. 3132 and 638 (male) are specimens illustrating the deformity produced by hip-disease, and 3133 is probably a model of a pelvis with the left side atrophied from disuse of the left leg. In the group of non-rachitic deformities we have still to find out the exact cause of the common flat pelvis. Most of the slight but common, and therefore very important, flat pelves belong to this group; cases in which the sagittal suture is found to be transverse and receding towards the sacral promontory as the head advances with difficulty through the brim. Nos. 3103, 3105, 1126.

Then follows the scoliotic, due in almost every case to lateral spinal curvature, not uncommon; 3121, 3129, 1116. Nos. 3111, 278, 1119, are instances of oblique flat pelves; 3110, scoliotic justo-minor, and 280, 1114, scoliotic justo-major, before mentioned, belong to this group.

The kyphotic is due to angular curvature in the lumbar or dorso-lumbar region; 1112, 1113, both male pelves. No. 1122 is an instance of scolio-kyphosis, and 3122 is irregular, the transverse diameter of the outlet being enlarged instead of diminished, and measures $4\frac{1}{2}$ inches.

We now come to the group modified during maintenance—

(1.) *By disease and pressure.*

Mollities, 3112, 3113, 3114, 3115, 3116, 3117, 290, 291, 292.

Osteitis deformans, none.

At present I believe there is no known specimen of pelvis affected by osteitis deformans, but from a careful examination of a patient of Mr. Langton's which I made with Mr. Bowlby during the past summer, presenting well-marked signs of the disease, we concluded that her pelvis was enlarged; and as her legs were much bowed, we surmised that her pelvis might also be distorted. We took the following measurements:—

Age, 54; height, $55\frac{1}{2}$ inches.
Ext. conjugate . . $8\frac{1}{2}$ inches.
Spines . . 12 „
Crests . . 13 „
Ext. oblique R. . . $10\frac{1}{2}$ „
L. . . $10\frac{1}{4}$ „

This patient is under observation.

(2.) *By overhanging tumours or vertebræ obstructing the inlet, forming the group "Obtecta."*
Spondylolisthesis, 3130.
Spondylolizema, none.
Exostosis, 3134, 3137.

(3.) *By tumours in the cavity of the pelvis,* 3135, 3139, 3140.

(4.) *By fracture, no specimen.*

The whole of this collection of about sixty pelves I have carefully examined and measured, and most of them now have a card attached giving the lengths of the various diameters.

NOTES

ON A

CASE OF PYÆMIA WITH SUPPURATIVE PERICARDITIS.

BY

R. D. BRINTON, M.B., AND R. J. COLLYNS.

C—— N——, aged 9, was admitted into Kenton Ward on August 30, 1883.

The history was that on the 20th August he fell from a swing and sustained some injury to his shoulder, and had been unconscious ever since.

On admission he was drowsy, moaning when roused, and looked seriously ill. Breathing rapid, 56, and loud. Pulse irregular and intermittent. Temperature 102°. The left shoulder was tense, red, very much swollen, with the cutaneous veins engorged.

Aug. 31.—The boy is better. Respiration and pulse rate the same. Temperature a little lower, 101°. On physical examination the signs of pneumonia and pleurisy of left base were found.

On September 2d the abscess on the left shoulder was opened, and ʒiij. of healthy pus escaped, after which he had a good night. The pneumonia was progressing favourably.

After the abscess was opened the temperature assumed the hectic character, ranging between 100° and 103.6°.

On September 4th he complained of pain in the left thigh, and slept badly. Pulse 134, irregular. Respiration 44.

Sept. 7.—Slept heavily last night. Skin was dusky, and Cheyne-Stokes respiration was observed. He cries when moved, and still complains of tenderness over the hip, and the shoulder discharges freely.

Sept. 8.—The boy's condition has improved, and he takes interest in what goes on around him; he coughs less, and breathes

more easily. The physical signs are those of pleural effusion on the left side. Skin less livid.

On the 9th a counter-opening was made through the left deltoid.

11th.—Has become more drowsy. The temperature is no longer hectic, but remains at 103.2°, and there is a red blush round the wound.

13th.—The blush has extended to the elbow, and the temperature reached 104.2° in the evening.

15th.—No extension of blush. The temperature is lower, and the boy seems better, and takes his food well.

17th.—Temperature normal. The boy is sweating profusely, and the skin has again become dusky, though there is great anæmia.

The area of præcordial dulness extends to the third rib, but is not increased to the right, and the apex beat is not to be felt. Loud bronchial breathing is heard over the front of right apex and râles over the left side. Pulse 90, very irregular. Respiration 45, shallow.

20th.—General condition unchanged.

Physical examination of chest discovers dulness over the left front below the second rib, not extending beyond the right border of the sternum, nor beyond the left anterior axillary line. There is absence of respiratory murmur over the dull area. Resonance and respiratory murmur unimpaired behind.

24th.—The patient is frequently sick, and consequently is fed by nutritive enemata. He is very drowsy during the day and does not sleep at night. The shoulder is nearly healed. The left foot is œdematous and tender and the extremities are cold.

25th.—The boy has been sweating profusely for several days. The respirations are laboured, the pulse 108, feeble, irregular, and intermittent, the intermission corresponding with each inspiration, so that three or four beats follow in rapid succession and then two are dropped, though the heart's action is regular ("pulsus paradoxus" vel "pulsus cum inspiratione intermittens"). The physical signs of the chest are unchanged, except that dulness has extended farther to the left. To confirm the diagnosis of a localised empyema, an exploring trocar was inserted and serous fluid was obtained. Subsequently with an aspirator introduced in the mid-axillary line ℥xiij. of blood-stained serum were drawn off. This was followed by considerable relief of the sickness and other symptoms.

30th.—The boy is not so well again. There is great œdema of the face and body, especially on the left side, the left leg being still very tender. The physical signs being almost the same as before the first aspiration, the operation was repeated, with the

result that ℥ij. of clear serum were evacuated without any improvement in the state of the chest or relief of general symptoms.

Oct. 2.—The breathing having become very difficult, and the pulse being still "paradox" and very feeble, with cold extremities and livid face, it was determined to make a free opening into the chest. Accordingly, an incision was made into the pleural cavity through the fifth left interspace. No fluid escaped, but on passing the finger through the opening a tense bag of fluid was felt towards the right in the direction of the heart. This was judged to be the pericardium, and was opened by free incision, through which ℥xxiv. of sweet pus escaped forcibly. This was followed by immediate and great relief to respiration and circulation.

3d.—The boy had a good night and is still much relieved. He lies on his left side, so the opening is in the most dependent part of the chest, and pus escapes freely into absorbent wool and gauze.

4th.—Last night the temperature, which had been normal since the 23d (ten days), reached 102.8°, and reassumed the hectic character, ranging between 100° and 103°.

5th.—As the boy seemed to be lapsing into his former condition, the finger was passed through the opening into the chest, and the heart was felt without the intervention of any collection of fluid. He continues to sleep and take his food well.

7th.—Free discharge of ℥i. or ℥ij. of pus daily, increased after injecting Condy's fluid from a ball-syringe.

8th.—To-day an inch and a half of soft No. 12 catheter with a shield was inserted into the opening. The pulse immediately increased in frequency to 160. The cavity was subsequently syringed through this tube daily.

12th.—The boy is decidedly worse. Complexion more dusky, breathing more laboured, and the pulse is now failing. The œdema of the left side has increased. He still takes food well, repeatedly asking for bread and butter. The drainage-tube was removed this afternoon.

From this date the patient gradually sank, though his appetite remained good. Coughing was frequently followed by vomiting. The œdema increased, and so did the obstruction to circulation and respiration.

17th.—His general condition this evening being so bad and dulness on percussion being found all over the left side, it was determined to try and relieve the urgent symptoms by evacuating any fluid that might be found. With this object in view the chest was punctured in two places about the level of the angle of the scapula. The second puncture showed the pressure of a serous

fluid in the pleural cavity, but the aspirator failed to withdraw more than a few drops of blood-stained fluid.

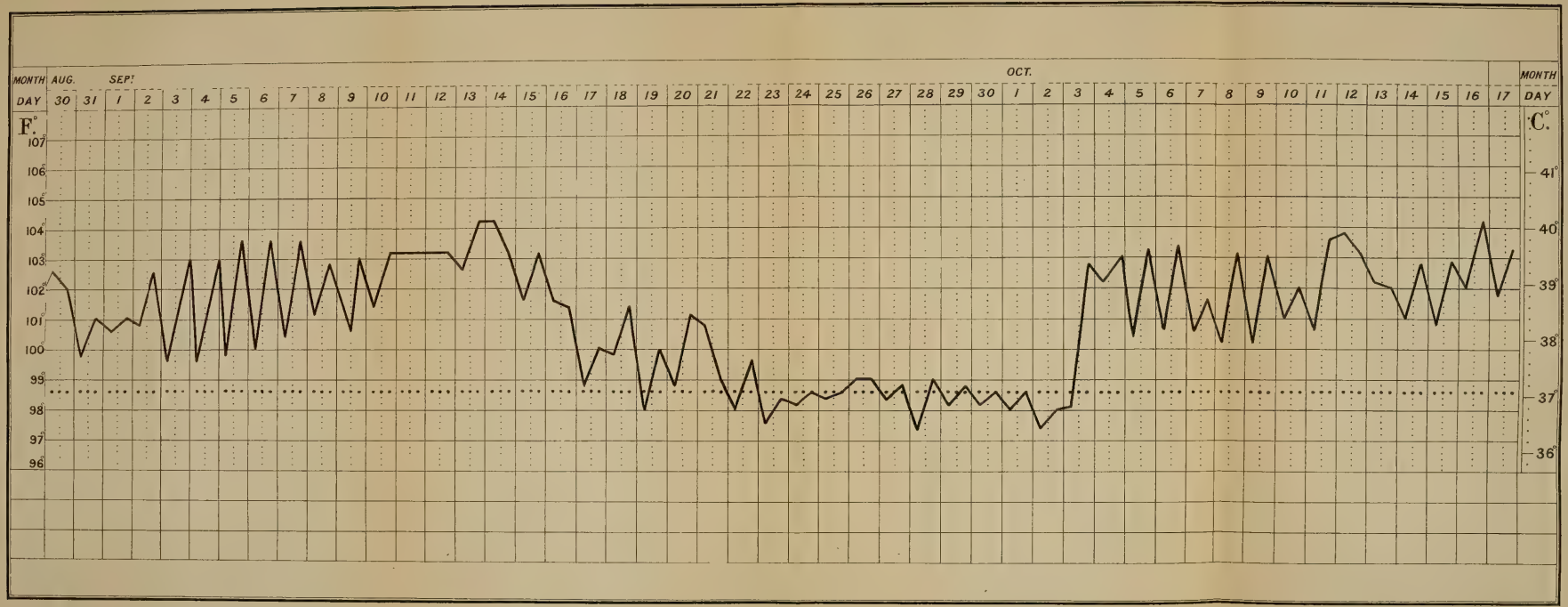
Death occurred at midnight.

Autopsy thirty-two hours after death.—The abscess cavity on left shoulder had completely healed; it had not communicated with the joint, which was healthy, nor was the bone diseased. There was a large abscess extending from the crest of the ilium to the junction of lower and middle thirds of the left thigh, burrowing amongst the muscles and not communicating with the hip-joint. The synovial membrane of this joint was inflamed slightly and the ligamentum teres was eroded in one part. In the left ankle-joint there were more decided traces of synovitis, and a few flakes of lymph were contained in it.

Chest.—Much œdema of walls of left side, also of mediastinal tissues. The parietal pericardium was greatly thickened in front and adherent to the left pleura, and in some parts it was two or three lines thick. There was no pus in the pericardium, but some shreds of lymph. There was free communication through the aperture in the pericardium, pleura, and chest-walls with the atmosphere. Round the aperture the pleura and pericardium were adherent to one another and to the chest-walls, so that there was no communication between the air and the pleural cavity. These adhesions, aided by the collapsed lung behind, divided the pleural cavity into two compartments not communicating with one another.

In both these compartments there was much non-purulent turbid fluid. The left lung was completely collapsed. There was a considerable collection of serous fluid in the right pleural cavity, the lung being healthy. There was adhesion between the two surfaces of pericardium and œdema and increase of areolar tissues in the region of the great vessels at the base of the heart; the adhesions were especially dense and numerous along the right border of the heart and the inferior vena cava, and also at the back of the heart. They were so firm along the right border that the cardiac substance itself gave way if separation of the two layers of the pericardium was attempted. The apex and left side and front of the heart were free from adhesions. Other viscera normal.

Remarks.—The features of this case may best be explained by regarding it as one of subacute pyæmia, the original lesion of which would appear to be the injury to the shoulder resulting in an abscess. The pneumonia, the abscess in the thigh, and the pericarditis were all dependent on the pyæmia. The pericarditis was of very early date, judging from the characters of the pulse, although the physical signs were misleading, the chief difficulty being that the dulness did not extend beyond the normal limits


MONTH AUG. SEPT OCT. MONTH
DAY 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 DAY
F°
107
106
105
104
103
102
101
100
99
98
97
96
C°
41
40
39
38
37
36
STANFORD'S GEOG^L ESTAB^T LONDON

of præcordial dulness to the right. The fluid obtained by the first aspiration was probably the result of the pleuro-pneumonia. The fluid found in the pleural cavities post-mortem was part of the general dropsy due to obstructed circulation; this dropsy was much more abundant on the left than on the right side, because the former was the side on which the patient habitually lay.

On looking at the temperature chart, it is seen that as long as there was any discharge of pus the temperature was hectic. Thus as long as the abscess in the shoulder remained open there was a range of three and a half degrees between the morning and evening temperature. This was modified by an intercurrent attack of erysipelas; and on the subsidence of the erysipelas and the healing of the abscess, which were almost simultaneous, the temperature remained normal, although the pericardium was distended with pus, and it was not until this tension was relieved by the evacuation of the pus that the temperature reassumed the hectic characters.

The striking anomaly of a normal temperature existing with a large abscess of the thigh and so great a collection of pus in the pericardium may perhaps be explained by the supposition that in pyrexia the process of combustion is excessive, but increased combustion needs an increased supply of oxygen to the blood. In the case described above, this increased supply was impossible owing to the embarrassment of the circulation, due in part to the hampered action of the heart, and aided by the collapse of the left lung.

As far as the pericarditis was concerned, the free incision was of signal service, and obviously prolonged the patient's life.

On the last occasion of puncturing the thorax, just before death, the probable reason for the failure to find fluid was that the trocar entered the collapsed lung.

The temperature chart is annexed.

CASES OF OCULAR MOTOR-PARALYSIS.

BY

W. J. COLLINS, M.D.

The following fourteen cases of paralytic affections of the muscles of the eye are of interest, more on account of the extreme diversity of the class of cases which they illustrate, than as furnishing sufficient data upon which to generalise. Most of the cases here detailed were patients of Mr. Power or Mr. Vernon in the ophthalmic department; one case (No. X.) was a patient under Mr. Smith's care, and I beg to thank those gentlemen for the right to publish the cases. A few of them were patients of mine at the Western Ophthalmic Hospital.

Among the following fourteen cases there are the following varieties of paralysis:—(1.) Complete bilateral paralysis of all the ocular muscles except the levatores palpebrarum. (2.) Complete paralysis of all the muscles of one eye, ptosis, however, being partial only. (3.) Complete bilateral paralysis with the exception of the left levator palpebræ, accompanied by supraorbital anæsthesia and bilateral neuro-retinitis. (4.) Bilateral paralysis of the fourth and sixth nerves only. (5.) Unilateral paralysis of the fourth and sixth nerves only. (6.) Asymmetrical partial paralysis of the muscles supplied by the third nerves. (7.) Paralysis of the third nerve only. (8.) Paralysis of the intraocular muscles of the pupil and of the ciliary body only; the ophthalmoplegia interna of Jonathan Hutchinson.[1] (9.) Traumatic persistent iridoplegia.

Excluding the traumatic case from consideration, of the remaining thirteen, five were females, eight were males. Twelve of the patients were of ages between 20 and 49. Of the ten cases of extraocular paralysis, seven gave histories suspiciously syphilitic. One case was attributed to cold, another to a fit of

[1] Medico-Chirurgical Transactions, 1878.

coughing; one case was evidently emotional, if not hysterical, in origin. In six of the ten cases frontal headache was a constant and distressing symptom, and in several preceded the attack by some days or weeks. In three of these cases the headache was apparently due to periostitis of the orbit, to which cause, by its pressure effects upon the nervous structures, the paralysis was most probably attributable. In one case there was bilateral neuro-retinitis going on to white atrophy. One of the cases of ophthalmoplegia interna was traceable to diphtheria; another seemed referrible to prolonged working in the dark. Of the seven cases that were treated with iodide of potassium, there was alleviation of the symptoms in all, and in some gradual and progressive restoration of motor power.

The most important point respecting these cases of ocular motor paralysis is unfortunately still the most obscure, viz., that of the seat of the lesion. Intraocular paralysis, when the only symptom, is referred by Hutchinson to the lenticular ganglion. In the following cases, when periostitis in the form of nodes or gummata was present, it is probable that the lesion was situated in the orbit or the sphenoidal fissure. In those cases of bilateral paralysis, especially when there is implication of the optic nerves, the base of the brain or the central ganglia are presumably the seat of disease.

CASE I.—*Complete Symmetrical Paralysis of the Ocular Muscles, the Levatores Palpebrarum escaping.*

John K., æt. 49, bookbinder; married; has had fifteen children, six of whom died young; wife has had two miscarriages. Denies any history of syphilis. One Sunday evening in October 1882, during a fit of coughing, he felt a pain in his left eye, and his friends noticed he squinted. Next morning the eye felt stiff and protruded. On December 2 he came to the hospital complaining of dim vision, when it was found that he could not move either eye in any direction, but he could shut the eyes perfectly. He had a fixed staring expression; the left eye appeared more prominent than the right, and in both a line of white sclerotic showed above the iris. Beyond some mottling of the choroidal pigment and two dioptres of myopia, nothing abnormal was discovered in the eyes themselves. The facial nerves were quite unaffected, and the proptosis appeared to be simply due to the paralysed state of the extraocular muscles. There was some blunting of sensation, as tested by two points of compasses over both brows, more marked on the left side. A fortnight after

taking iodide of potassium he could move the eyes horizontally, but not at all vertically.

CASE II.—*Complete Paralysis of all the Muscles of the Left Eye, with Incomplete Ptosis.*

Jane W., æt. 36; married; four children; has lost none. For three or four days before Christmas 1882 she felt giddy and sick, with pain over the left brow and zygoma; vomited several times, and noticed things looked double. She has had no injury to her head; there is no history of syphilis. On December 30 she presented marked proptosis of the left eye, which was immoveable in any direction. There was slight ptosis; the eyelids could be closed tightly; there was tenderness on percussion over the left brow and malar region. The left optic disc was paler than the right, and its margins indefinite. The right eye was perfectly normal in appearance, and its movements in all directions good. Vision with each eye $= \frac{6}{36}$. She was ordered iodide of potassium and nux vomica, and iodine liniment was painted over the left frontal and temporal regions. By January 8, 1883, great improvement had taken place; there was no proptosis, hardly any ptosis; no tenderness; vertical motion had returned, but lateral movements were very much restricted.

CASE III.—*Almost Complete Symmetrical Paralysis of the Ocular Muscles—Neuro-retinitis in both Eyes, proceeding to White Atrophy in the Left—Evidence of Periostitis around the Right Orbit—Symptoms of Intracranial Disease.*

Jane P., æt. 23, single. In January 1882 she suffered much from headache and vomiting. In July 1882 she was an outpatient at Moorfields for lachrymal abscess on the right side, with "much bare bone." On December 18, 1882, double optic neuritis was noted; vision then $= \frac{6}{12}$. In January 1883 she had to give up work on account of giddiness and sickness. On February 20 she came to the hospital complaining that for the last fourteen days she had been blind with both eyes. She was pale and sickly in appearance; there were old strumous scars in the neck; the bridge of the nose was much flattened. There were scars of old lachrymal abscesses; the lower canaliculus on each side had been slit up. There was a tender prominent puffy swelling over the right brow; there was ptosis of that eye; the upper lid had a dusky hue. On raising this there was proptosis of the globe very marked; all movements were much impaired, especially the vertical. Pupil widely dilated and inactive. There was not even perception of

light. With the ophthalmoscope intense neuro-retinitis was to be seen. The left eye presented no ptosis, but marked proptosis and similarly restricted movements. Neuro-retinitis going on to silvery white atrophy was seen in this eye. She complained much of vertical headache and vomited frequently. Over the right brow there was a sharply defined area of anæsthesia corresponding with the distribution of the cutaneous branches of the ophthalmic division of the fifth nerve. Her hair had fallen off in patches; she was rather deaf, and her physiognomy was suggestive of hereditary syphilis, though the teeth gave no evidence thereof. She was ordered large doses of iodide of potassium; the supra-orbital swelling, which much resembled a node, was painted with iodine liniment, and rapidly subsided. She improved under treatment, and by March 18th she could count fingers with the right eye and read the largest letter on the text-type at a yard's distance. It is difficult, however, to believe, considering the course of events in the left eye, that the improvement would be likely to be permanent.

Case IV.—*Symmetrical Paralysis of the Fourth and Sixth Nerves.*

Eliza W., æt. 34; married; one child dead of measles; one miscarriage. A week before Christmas 1882 noticed she could not see out of her left eye; this came on suddenly with severe headache; the blindness soon passed off, and then she noticed everything looked double. She has complete paralysis of both external recti, and also, as was very distinctly shown, complete paralysis of both superior obliques, pointing to a symmetrical lesion of the fourth and sixth pairs of nerves. There was no paralysis of the muscles supplied by the third nerves. There is no history of injury nor of a fit. There is no tenderness on percussion over the brows. The optic discs are healthy and the fundi normal. Vision with the right eye $= \frac{6}{6}$; with the left $= \frac{6}{9}$. She was ordered iodide of potassium, which relieved her headache, but when last seen the paralysis remained much the same.

Case V.—*Paralysis of the Fourth and Sixth Nerves (Right)—Improvement under Iodide of Potassium.*

William C., æt. 26. In August 1883 was taken ill with severe frontal headache; the next day he saw things double; was very giddy and his sight was dim. He had had no recent injury; he had a chancre three years ago, followed by inflamed inguinal glands and some ill-defined skin eruption. There is well-marked

internal squint of five or six lines of the right eye; he cannot look to the right with that eye, nor can he put the superior oblique muscle in action. Pupils equal and active. Both near and distant vision are normal with each eye. He was ordered iodide of potassium in increasing doses from five to thirty grains three times a day with marked improvement; the paralysed muscles steadily regaining power.

CASE VI.—*Paresis of the Muscles supplied by the Right Third Nerve—Evidence of Syphilis—Great Improvement under Iodide of Potassium.*

Mary S., æt. 46. On getting up one morning in November 1882, she found she could not open her right eye. There is ptosis of the right eye; paresis of the superior, internal, and inferior recti, the eye being drawn outwards. The pupil is larger than the left (size No. 4). The left eye is normal, and the pupil is of size No. 2. There is a tubercular syphilitic rash on the forehead. She has had six children and lost four. She has had no fits, but suffers from headache, worse at night. Vision of right eye $= \frac{6}{24}$, of left eye $= \frac{6}{9}$. She attended as an out-patient for two months, and improved greatly under iodide of potassium.

CASE VII.—*Paresis of the Muscles supplied by the Right Third Nerve—Attributed to Cold—Syphilitic History.*

Afred W., æt. 63. Was working in a draughty place in March 1882, when the right eye became watery, and gradually the upper eyelid drooped, and he could not open the eye. There was complete ptosis of the right eye, with partial palsy of the superior and inferior rectus, while the internal rectus was completely paralysed; the pupil was somewhat dilated. Vision with right eye $= \frac{6}{24}$, with left eye $= \frac{5}{24}$. He had had a chancre thirty years ago, followed by a rash. For some time past he had suffered with headache.

CASE VIII.—*Complete Paralysis of all the Muscles supplied by the Right Third Nerve.*

David M., æt. 29. On May 12, 1883, he noticed the right upper lid drooped, and that when he raised it things appeared double. He could not read with that eye.

He had had no headache, nor any fit, nor injury previously. Had gonorrhœa two years ago, but no sore. There is ptosis of the right eye, external strabismus, and inability to move the eye up, down, or inwards. The pupil is dilated, and does not act to light or

when looking at near objects. The left eye is normal. There is no sensory lesion, no tenderness around the orbit. Vision with right eye = $\frac{6}{12}$, with + .50D = $\frac{6}{6}$; with left eye = $\frac{6}{6}$, with + .50D = $\frac{6}{6}$. Near vision with the right eye = Jaeger 16, with + 2.50D = Jaeger 2; with left eye = Jaeger 1. The tension is rather less in the right eye than the left. There was great improvement under iodide of potassium treatment.

CASE IX.—*Recurrent, Partial, Asymmetrical Paralysis of the Ocular Muscles in a Girl aged Eighteen, apparently of Emotional Origin.*

Alice Maria L., æt. 18, teacher. Three years ago she suffered from a transient attack of ptosis of both eyes, she was treated at Moorfields, and recovered completely. In December 1880 she had a similar attack; this lasted eight months, but she again recovered completely. In September 1882 she again began to suffer with ptosis of her right eye, and when the ptosis was incomplete, with vertical diplopia. She is a small, stunted girl, with a misshapen head, and a silly though hardly hysterical manner. The right eyebrow is higher than the left; the venules of the right upper lid are large and prominent; there is marked ptosis on that side. If the drooping lid be raised, there is vertical tilted diplopia; the right globe is lower than the left when she is told to look straight forwards. When told to look up, the left globe ascends more than the right. The intraocular muscles are active. No lesion of the fifth or seventh nerves. Vision of right eye = $\frac{6}{9}$, with − .50D = $\frac{6}{6}$, of left eye = $\frac{6}{24}$, with + 2D, and + 1.50D cylinder (axis vertical) = $\frac{6}{12}$. Media clear; fundi healthy. Field of vision for colours of left eye much restricted; of right eye, normal.

When suddenly awoke from sleep on three occasions she opened her eyes equally and well, and moved them freely in all directions. There was, however, no suspicion of the genuineness of her symptoms; she was very anxious to be cured in order that she might resume her occupation. Galvanism and faradism were tried with not much benefit. Several carious teeth were removed. A number of antihysterical remedies were prescribed, and a seton inserted but without improvement. The diplopia was obviated by prisms; but though a long while under observation, there was no perceptible change in her condition.

CASE X.—*Partial and Asymmetrical Paralysis of Ocular Muscles —Evidence of Periostitis around Orbits—History of Syphilis.*

Charles F., æt. 31, boot-finisher. Had syphilis fourteen years ago. For five years has had swelling of the root of the nose, with discharge of pus and bits of bone. Eighteen months ago suffered with pain round the orbits and in forehead. Since June 1882 the right eye has squinted out. Lately the eyes have become more prominent, especially the left. He is deaf, but not absolutely. On January 26, 1883, great impairment of motion of the right eye inwards and of the left eye upwards was observed. No ptosis. Pupils equal, not large, and active. No sensory lesion. Much bare bone was found high up on the outer wall of the right nostril; there was much fetid discharge.

CASE XI.—*Ophthalmoplegia Interna.*

Edward C., æt. 38, a cabman, complains of "weak eyes" and recently developed "long sight," also of deafness of left ear. There is no history or sign of syphilis, diphtheria, or injury. Distant vision with each eye $= \frac{6}{12}$, and with $+ .75D = \frac{6}{9}$; but he is quite unable to read the largest of Snellen's reading types at twelve inches without glasses. With + 4.50D, however, he can read No. $1\frac{1}{2}$ type at twelve inches. Both pupils are dilated (size No. 12) equally, and immobile to light or when looking at near objects. There is no other symptom of paralysis anywhere. Ten minutes after eserine had been instilled into both eyes he could read No. 3 type at twelve inches distant, and tell the time with a watch at four inches.

CASE XII.—*Ophthalmoplegia Interna following Diphtheria.*

Man æt. 20. Had diphtheria seven weeks ago. A fortnight ago he began to notice a difficulty in reading, though his distant vision remained fairly good. Vision of right eye $= \frac{6}{18}$, with $+ 1D = \frac{6}{9}$; of left eye $= \frac{6}{24}$, with $+ 1D = \frac{6}{12}$. Pupils equal, large, very sluggish. No other sign of paralysis in any other part of the body. He could not read the largest of Snellen's reading types held at the usual distance, but with a + 5D lens he could read the smallest. The patient was practically in the condition of a presbyope of + 5D. That this was due to want of accommodation, and not solely to the dilated pupils allowing large diffusion circles, was proved by the fact that when directed to read through a pinhole he could only decipher No. 3 instead of No. $1\frac{1}{2}$ of Snellen's types. In seven and a half minutes after the instillation of eserine

(gr. i. to 3i.), the smallest type could be read with ease, and the effect lasted for from three to six hours, near vision gradually fading away.

Case XIII.—*Ophthalmoplegia Interna, apparently due to prolonged Working in the Dark.*

A male out-patient, æt. 26. Has been working five weeks in the underground railway. Complains of dimness of vision. On inquiry it proves to be near vision, and the impairment is of recent origin. Vision with each eye $= \frac{6}{6}$. He can tell the time by a watch held at six feet from his eyes, but not at one foot. Pupils moderately dilated, equal, and fixed; they do not contract or dilate in light or darkness, nor when the eyes are directed to near objects. Tension normal, media clear, fundus of each eye healthy. After the instillation of eserine he could tell the time by the watch at six inches easily.

Case XIV.—*Persistent Irido-plegia, following a Blow on the Eye.*

Emily W., æt. 28, received a blow on her left eye from a falling beam of wood in November 1882. The eye was contused, but not wounded, and there was hyphæmia to one-tenth of the anterior chamber. The pupil was irregular and somewhat eccentric downwards and outwards. There was no dislocation of the lens, nor had the deeper structures of the eye sustained any damage. The hyphæmia cleared away, and vision in that eye, with its native myopic astigmatism corrected, was equal to that of the other eye, viz. $= \frac{6}{9}$. Very near vision, however, remained somewhat blurred. The eye had been kept under atropine while the patient was in the hospital; but on the cessation of its use mydriasis continued and persisted; likewise there remained some of the former eccentricity of the pupil. Four months after the injury the mydriasis continued very marked, notwithstanding the frequent application of eserine, to which it steadily responded for a while. Twelve months have now elapsed since the injury, and the left pupil is still larger than the right, though less strikingly so, and best seen in a dim light.

NOTES

OF A

CASE OF RUPTURED DIAPHRAGM.[1]

BY

R. D. BRINTON, M.B.

A—— L——, aged 32, a gas-engineer, was passing along Thames Street on October 16, when a case of machinery, while being lowered from the upper storey of a warehouse, slipped from a crane and fell on him. He was at once taken to the hospital and admitted to Kenton.

He was found to be suffering from a compound fracture of the right tibia and a simple fracture of the fibula of the same side; the upper fragment of the tibia projected about an inch through a small wound in the skin. Reduction was easy under chloroform, and the limb was dressed with oiled lint and placed in a back and two side splints. He did not appear to have any other serious injury. He complained slightly of soreness in the region of the left lower ribs; no fracture was detected there. When seen the last thing at night, he still complained of this feeling of soreness, but he slept well after morphia gr. $\frac{1}{4}$ sub cut. Oozing from the wound necessitated a firm pad of lint. He took a fair amount of fluid nourishment during the evening.

17th.—Respirations hurried, 44; but he says that his chest has been bad for some years, and that it has been tender to the touch, but he has never had to "knock off work" on that account. Some distress of breathing; about the same as last night.

There is deficient movement on the left side of the chest; the intercostal spaces are widened, and the apex-beat palpable as far

[1] For permission to publish this case I am indebted to Mr. Savory, in whose ward it occurred; and I ought not to begin the notes without thanking Mr. R. J. Collyns for his assistance in studying the physical signs.

as the right nipple-line. The whole left front is hyper-resonant; the breathing sounds in that situation are exceedingly feeble, and at the apex have slight amphoric quality. From these signs pneumothorax was diagnosed. He has passed his water naturally since the accident, and it is found to contain a slight amount of albumen and numerous blood discs. Temperature normal, and the leg is quite comfortable, so it was not dressed.

In the evening a linseed and mustard poultice was applied to the chest; this greatly relieved his discomfort. He slept fairly after morphia gr. ¼.

18th.—Temperature 100°. Respiration 48. Dyspnœa has increased since yesterday. The abdomen is flat. The liver is not to be felt and the breathing is wholly costal. There is lividity of the face, and the tongue is dry and brown, and the lips covered with sordes. Ordered brandy.

The physical signs remain the same, but in the evening a distinct metallic tinkle was heard by listening at the front of the chest.

The bowels have not been open since the accident, although on several occasions he has had the desire to stool and has asked for the bedpan.

Late at night all the symptoms were worse. He was delirious, but was quieted by tinct. opii ♏xv. in ʒss. of brandy.

19th.—His face is very dusky and grey, and the tips of the fingers and the nails livid. The dsypnœa has increased. The right radial pulse is weaker than the left. He still takes fluids. The physical signs of pneumothorax continue. The beat of the heart is felt two inches outside the nipple-line in the right side, and the dulness extends quite as far as the nipple-line. The metallic tinkle is heard at the left apex, and the bell sound obtained between the second costal interspace and the fifth in front. A small trocar was passed into the thorax in the axillary line, but there was no passage of air through the tube.

He died at 4 P.M., exactly seventy-two hours after admission.

I am indebted for the following account of the post-mortem appearances to Mr. Macready's notes in the Registrar's book.

On the removal of the integuments from the wall, the round of a pill-box was placed over the fourth intercostal space outside the nipple, and water poured into the enclosure thus formed. On puncturing the intercostal muscles, air bubbled out freely.

The sternum and ribs were then raised, and the heart was found much displaced to the right. Its right border corresponded to the junction of the ribs on that side with their cartilages.

The right pleural cavity contained nearly a pint of blood.

The right lung was somewhat collapsed, and its edge was displaced outwards, but it was otherwise healthy.

There was a small rent in the right side of the diaphragm at its lowest part, which passed behind the liver and led to a cavity behind the right kidney and the peritoneum.

The diaphragm on the left side presented a rent about eight inches long, commencing in front of the œsophageal opening and passing outwards, and curving in a backward direction towards the false ribs.

The left pleural cavity contained the stomach, transverse colon, great omentum, the spleen, and a few coils of small intestine.

The left side of the heart was flattened, and was opposite the mid-sternal line.

The left lung was quite collapsed, and lay against the side of the spine.

The other organs were healthy and there was no fracture of the ribs.

The position of the liver had been altered; its superior surface was lying behind the abdominal walls, and its anterior edge was less than two inches above the umbilicus.

Remarks.—On comparing this case with Mr. Butlin's "Three Cases of Air in the Pleural Cavity as the Result of Injury," in vol. xi. of the Hospital Reports, many points both of similarity and difference with regard to physical signs are seen. In all three cases, as in the case recorded above, there was the same hyper-resonance and diminution of vocal resonance vibration and breathing sounds in the injured side, which was in all these cases the left, and the same displacement to the right of the heart's apex. The first two of these cases were undoubtedly cases of pneumothorax, and in the report of them it is expressly noted that the breathing was diaphragmatic, while in the third case no mention was made of the thoracic or abdominal character of the respiratory act. In the case mentioned above it was distinctly noticed that the diaphragm appeared to be paralysed, the breathing being wholly costal and the abdomen flattened; and while all the classical signs of pneumothorax, such as metallic tinkle, bell sound, and amphoric quality of respiration, were present, the presence of this quality of breathing might have guided to the diagnosis of the escape of some air containing abdominal viscera into the thorax. Dr. Gee in his work "Auscultation and Percussion," in discussing pneumothorax, reminds one that all the signs of this condition may be present in a case of hernia of the stomach in a distended condition into the pleura.

No gurgling was at any time heard over the left side of the chest in the case now recorded, although a good deal of fluid nourishment was taken; but it is probable that if the condition of the patient had warranted succussion, liquid sounds such as splashing would have been heard, and would have fallen in with the theory of air in the pleural cavity with the addition of fluid, as in Case I. of Mr. Butlin's report mentioned above.

From these cases it will be seen that the diagnosis between pneumothorax and hernia of the stomach must always be difficult, and must rest chiefly on the costal or abdominal character of the breathing.

The onset of symptoms in Mr. Savory's case was gradual; in fact, on admission the discomfort was that which might very well been caused by a single fractured rib or a simply contused chest-wall. No fracture was detected, and there was no emphysema.

The trocar which was introduced into the chest in the axillary line a few hours before death most probably entered collapsed lung.

FROM THE DEPARTMENT FOR DISEASES OF THE LARYNX.

BY

HENRY T. BUTLIN.

Tracheal Papilloma—Nasal Polypi.

In the last volume of our Reports I gave a general sketch of the organisation and working of the department for diseases of the larynx, and added an account of several interesting cases, together with a few remarks on the removal of the tonsils (vol. xviii. p. 121). The material of this paper is derived from the same source. I am glad to find that the department increases in popularity, and still more glad to find that the three-months' course, of which I spoke last year, has sufficed to provide most of my dressers with an acquaintance with the use of the laryngoscope which enables them to diagnose most of the common affections of the larynx. Certainly they are not likely to overlook any serious malady which requires active treatment. Those who have profited most by the three-months' course are the dressers who have undertaken to apply lotion or powder to the larynx daily during many days or even weeks: the advantage in these cases has been twofold—an advantage to the patient and an advantage to the dresser. I should like to mention the names of those who have been most active in this good work, but perhaps I might omit one or other through forgetfulness, and thus pain some of those to whom I am indebted.

I propose to devote the present paper to the consideration of nasal polypi, especially in relation to treatment. The large number of cases of this disease which are sent to us has obliged me to devote a great deal of attention to the removal of polypi by various means, and to study closely their nature and the conditions under which they grow. Before I commence this subject, the case of

Tracheal Papilloma

which was published in the last volume of these Reports, p. 129, deserves a few words. The woman applied at the throat department about six months after she was discharged from the wards, complaining of not feeling quite well, and especially of fatigue on slight exertion. She was carefully examined, but nothing abnormal was detected in the chest or the trachea. There was a slight irregularity and very slight congestion of the left vocal cord, which was attributed to damage which had possibly been sustained during the operation. Tonics were ordered, and she was kept under observation. In the course of three months the irregularity of the vocal cord began to increase, and there was gradually developed, under our very eyes, a papilloma. Business called her into the country for several weeks, so that she has only now (November 2), returned for removal of the growth, which is still quite small. The further course of this case will be followed with the most profound interest and not a little anxiety, for, with such a tendency to the development of new growth in these regions, a recurrence of the original disease or a new formation of papillary growth in the larynx is not at all improbable.

Nasal Polypi.

It is not the intention of this paper to deal with the rarer forms of nasal polypi, but only with the common "mucous" polypi and one or two examples of firmer fibrous tumours. Some time ago, perceiving that the removal of multiple polypi was a very irksome and difficult matter, and that it was very difficult to obtain a complete cure even with the greatest care, I determined to remove the middle turbinated, and if necessary the superior bone, and thus destroy the origin of the disease. In order to perform the operation with precision, and to remove the bones with the least possible damage to the adjacent parts, I practised a set operation on the dead body. This consisted in passing the little finger, well-oiled, up the nostril over the upper border of the inferior bone until the margin of the middle bone was reached. A probe-pointed director was then passed between the middle turbinated bone and the outer wall of the nostril, and along this guide a probe-pointed pair of scissors, slightly curved, with one blade on either side of the bone to be removed. This was cut through with the scissors and removed with a pair of polypus-forceps. This operation was first practised on one of my patients at the hospital, from whom many polypi had been removed with the galvano-cautery, but who could not breathe thoroughly through the nostril

on account of a polypus which grew from the back of the middle turbinated bone. Complete success resulted, the man being able to breathe clearly through the nostril for the first time for many years. Another patient, a gentleman who lived in Ireland and had only a few days to spare in town, was speedily relieved in like manner. Since then the operation has been practised on several patients, but not in every instance with the same success, for more than one has suffered from recurrence. The unequal nature of the result led me to study much more carefully than I had previously done the general pathology of mucous polyps of the nose, to discover how far the accounts of them in the works on surgery are correct.

An examination of museum specimens shows that the disease is not limited in all cases to the turbinated bones, although polypi much more commonly grow from them than elsewhere. On the turbinated bones, they grow much more frequently from the middle and superior than from the inferior; but they grow also from the roof of the nose, from the outer wall of the nostril between the turbinated bones, and even from the sinuses. An excellent specimen is in the museum of the College of Surgeons (2201A), in which, in addition to other morbid conditions, a large polypus grows from the wall of the nostril close to the lachrymal sac; and a similar specimen exists in King's College Medical Museum. The only parts of the nostril which do not appear to suffer from them are, as is usually stated, the septum and the floor—an immunity the more singular in the former case, because the septum is not infrequently the seat of sarcomatous tumours. The closer texture of the mucous membrane of the septum, its less vascularity, and its closer attachment to the bone, may perhaps help to account for the circumstance.

Like the innocent tumours of many other regions of the body, polypi may be continuous outgrowths or distinct tumours. The continuous outgrowths are probably the commoner form. They may assume the typical polypus shape—a narrow stem or pedicle, and a swollen or clubbed end—but this simple shape is rather the exception than the rule. Some of them grow from a broad or elongated base and hang down, curtain-like, towards the floor of the nostrils: their free ends are not so bulky as their bases. Some project as elongated papillary growths in larger or smaller clusters from a limited area of attachment. And some, again, instead of growing merely downwards, increase at the same time, and more rapidly, in a horizontal direction. Each polypus, too, instead of being a complete and undivided mass, may be made compound by constrictions, clefts, and fissures, so as to appear like a bunch of polypi growing from a single stem or base.

But, in peculiarity and diversity of shape, the polypi which grow as separate tumours far outdo the continuous outgrowths. Their stems are often long, slender, or even thread-like; and from these stems hang, almost floating in the cavity of the nostril, rounded or ovoid or elongated masses, single or multiple, presenting the most grotesque variety of shape. These varied shapes of polypi have not received sufficient attention: they possess at least a twofold importance: first, in their relation to treatment; second, in their relation to pathology. The difficulty of snaring these compound growths will at once be appreciated, and the difficulty of completely removing the bases of those polypi which have very broad attachments is apparent. The pathological importance is chiefly in the light which these singular forms cast upon the general shapes assumed by tumours, a subject which has almost been overlooked. On this matter I shall not now dwell, for I hope to make it the subject of a future communication.

Mucous polypi grow, almost always, very slowly; but their growth is probably continuous, and is arrested only by the pressure of surrounding structures or by removal of the tumours. That their powers of growth are not exhausted is clearly proved by the well-known fact that, after removal, a polypus will, unless its base or point of attachment be removed, grow again, and attain a size as large or larger than it had before; and that not once, but ten or twenty times. This recurrence of a polypus is of great interest as it bears on the relations between innocent and malignant growths. Recurrence, or re-formation, of a tumour after removal is apt to be regarded as an indication of malignancy; yet here are tumours whose pertinacity in recurrence is not surpassed, indeed is scarcely equalled, by even the most typical recurring sarcoma or carcinoma. The only difference in the recurrence in the two cases is, that in the one a macroscopic and generally easily perceptible fragment of the tumour has been left behind; in the other, the fragment from which the recurrent tumour has been developed is usually microscopic, perhaps a mere germ or tumour-parasite, and consequently very difficult to detect. Recurrence is not a special property of malignant tumours, but depends wholly upon the difficulty of completely removing tumours.

The "mucous polypi" are almost invariably, as their name implies, composed of mucous tissue covered with mucous membrane. Some of them contain adenoid tissue, sometimes even arranged in spheroidal masses as if to form adenoid (lymphatic) glands. But the sections of numerous polypi which I have examined do not show the glandular crypts or follicles lined with columnar epithelium, which Billroth has figured and described as occurring

frequently or almost constantly in these growths ("Ueber den Bau der Schleim-polypen," Berlin, 1855).

Polypi are rare in childhood, but are not confined to any one period of adult life. They occur in old, even in very old, people. Men and women are apparently almost equally subject to them.

The common mucous polypi are almost invariably multiple, but single polypi, bearing the outward aspect of mucous polypi, do occur, and grow both from the front and back of the nostril. Two of these cases have been under my care during the past few months, both in women. One was a woman of six-and-thirty years, who was admitted into St. Bartholomew's on account of a large polypus which projected behind the soft palate, where it could easily be seen. It was completely pulled away with a pair of strong forceps, and the nostril was from that moment quite clear. The other was a young lady who had a polypus in a similar situation. This was removed in the same manner, coming completely away. Another case of the same kind occurred many years ago in a member of my own family, a male. The polypus projected in front, and was removed whole with a pair of forceps. Although more than five-and-twenty years have elapsed since that time, there has been no recurrence. These cases are, unfortunately, comparatively rare. When these solitary polypi occur at the back of the nostril, they are very liable to be mistaken for the much more formidable solitary fibrous polypi which grow in the same situation. The diagnosis is by no means easy, for it is very difficult, even with the finger and mirror, to make out clearly whether the growth has a broad or narrow base. Yet in the treatment and prognosis everything depends on this. If the base and seat of attachment of the tumour be small, it may be removed by a simple twist of a strong pair of forceps; if the base and seat of attachment be broad and strong, a serious operation will be required, and even repeated operations will not always succeed in destroying the disease.

The diagnosis of multiple mucous polypi is so easy, where a good light and proper instruments are employed, that it requires no special notice. When polypi are situated high up, or far back, or in very unusual situations, they may be difficult to discover; but if they are visible they are unmistakable.

The effects to which they give rise are naturally those due to obstruction of the nasal passages. Thus they produce the well-known "nasal" character of the voice. They prevent to a greater or less extent, according to their number and size, respiration through the nose, and consequently oblige the patient to keep the mouth always open. But they produce much worse effects than these. Taste and smell are in all instances impaired, in many

cases wholly and permanently lost. The bones of the nose are damaged, and where the disease is extensive, the external form of the nose is changed and the face is sometimes seriously disfigured. And the evidence of many observers goes to show that asthma is in some persons produced, or certainly much aggravated, by obstruction from polypi. It must not be supposed that polypi give rise, in every case, to troubles so serious as these; but the mere sense of obstruction which is always due to their presence is quite sufficient to make those who suffer from them most anxious to be rid of them.

In many cases the treatment of polypi must, I am afraid, be only palliative; in old persons, for example, or in very delicate people, and when the tumours are very numerous and are attached to other parts of the interior of the nostrils than the turbinated bones. When, on the other hand, the tumours are attached solely or chiefly to the turbinated bones, which may generally be determined after removal of some of the growths, there is no objection to removal of the affected bones: nay, the operation should, I think, be practised. Here let me say that I have always employed an anæsthetic for this operation, and that at first I considered it advisable to plug the nostril posteriorly. The plugging seems to be unnecessary, and should certainly be omitted, if possible, as it produces almost the only distress from which the patient afterwards suffers.

Since, in many instances, the treatment of polypi must be palliative, it behoves us to seek out for our patients a method of treatment which will, with the least amount of pain and discomfort, give good results. It not uncommonly happens that persons suffering from polypi require that they shall be removed at least once in every year, even to keep the nostrils tolerably clear. The pain of most methods of removal deters them from seeking relief as often as they ought to do. Experience of the guillotine, the forceps, the cold-wire snare, and the galvano-cautery leads me to give the preference, unhesitatingly, to the galvano-cautery. It is the least painful of all these methods, and the least bloody when the wire is employed at a dull red heat. For more than two years past I have been in the habit of using Voltolini's battery and Schech's instruments, and have been much pleased with both. The battery is very simply constructed and very easily kept in order: the instruments are very light and delicate. Both for the cold and the hot wire it is essential that a thoroughly good light should be obtained: this can be done by means of a laryngoscopic mirror and a duplex lamp or Argand burner. Of nasal speculums, Duplay's or Thudichum's are the best for polypi seated towards the front of the nostrils; Zaufal's

for posterior polypi. The objection to Zaufal's speculum is the pain it causes. The same objection makes Thudichum's speculum less desirable than Duplay's. The chief difficulty in the actual employment of the cautery is to place the wire loop around the polypi, a difficulty which will be appreciated by remembering the peculiar shapes assumed by polypi. The difficulty, however, diminishes with practice, and by bearing in mind that polypi situated far back or high up in the nostril cannot be broader than the space between the turbinated bones and the septum ; therefore that the loop need not, nay, must not, be wider than this space. A narrow loop, just wide enough to touch the bones on either side, is best adapted for these growths, and the loop should be long as well as narrow in order to secure the elongated growths. It is always best to get the polypi rather to drop into the loop than to attempt to press the loop over them. In most instances, very little hæmorrhage is produced by the removal of the tumours, therefore the sittings may be continued for a long time. If the wire be drawn tight around the polyp before it is heated, and if a dull red heat be employed, almost the only pain or discomfort complained of by the patient is that due to the introduction of the loop into the nostril. If the bases of the polypi can be seen, they should be freely treated with the red hot instrument to destroy them and prevent recurrence.

It must be admitted that this method of treating polypi is slow and tedious to the operator, for two to four sittings are required to clear both nostrils when they are full of growths, and the length of each sitting will be from thirty to forty-five minutes. But the comfort is so great, when compared with other methods, that I am obliged to spare the necessary time to treat with the cautery the many hospital patients who are transferred to my department. The expense of the apparatus is another important consideration (about £8) ; but in hospitals and practices where much surgery is done this need not be grudged, as the cautery is an exceedingly good one for other purposes. It is sufficiently powerful to heat a wire thick enough to cut through the tongue, or even a firmer structure. And the expense of maintaining it is small, for steel wire is used, and the construction of the battery is so simple that it can be kept in repair by the owner.

For country and for small town practice, the instrument to be preferred is the cold-wire snare, used with the same speculum and light as are employed with the galvano-cautery. The objections to the cold snare are the hæmorrhage it causes, and the force which is required to drag away the larger polypi with it. Nevertheless it is a far better instrument than the forceps or the guillotine for multiple polypi.

There are two other methods of treating polypi which have not been mentioned in this paper, the injection method and the sponge method. Of the latter I have not had any experience; it consists in dragging a piece of sponge through the nostril from behind forwards, with the object of detaching the growths and bringing them away. It does not strongly commend itself, but I shall probably try it during the next few months. The former method consists in injecting a small quantity of fluid, perchloride of iron or acetic acid, or some similar fluid, into each polyp, after which the growths are said to shrink and disappear. I confess this plan reminds me forcibly of the advice given to children to catch birds by putting salt upon their tails. Any one who knows anything of the number and situation of multiple polypi must at once see that such a method is quite impracticable, however admirable it may appear in theory.

The insufflation of various snuffs and powders, although very popular, does not appear to be attended with any real benefit, and is therefore never ordered in our department.

FIFTEEN CASES OF RETROVERSION OF THE GRAVID UTERUS,

WITH REMARKS.

BY

JAMIESON B. HURRY, M.B.

During the past six years there have been fifteen cases of retroversion of the gravid uterus in "Martha."

I propose in this paper to give a clinical account of some of these cases, to tabulate the most important symptoms and signs of all of them, as far as the record enables me to do, and finally to offer a few remarks on the tabulated results.

For much help in making these remarks I am indebted to a clinical lecture by Dr. J. Matthews Duncan.

E. G., æt. 30; married eleven years; five children; last one two years ago; catamenia commenced at 16; regular; last occurrence four and a half months ago.

Admitted November 19, 1879.

A week ago she went for a long walk, and on her return home suffered great pain, "as if womb had fallen."

Since then has had much difficulty in passing her water, making only little at a time and with much straining. Defæcation natural.

In the out-patient room, Dr. Godson drew off eight pints of clear urine (sp. gr. 1010) at 11 A.M., and at 4 P.M. 55 oz. (sp. gr. 1005) more were drawn off. The uterus, which before had been retroverted, then went back into its proper position of itself. The vesical sound entered the bladder seven inches, and its point could be felt $1\frac{1}{2}$ inch below the navel. During the next twenty-four hours $9\frac{1}{4}$ pints were passed with the help of the catheter.

Nov. 20.—*Per hypogastrium.*—Abdomen somewhat promi-

nent; dulness reaches to three inches above the pubes; a rounded tumour is felt in the situation of a pregnant uterus.

Per vaginam.—Nothing abnormal.

Nov. 22.—Urine only passed with the help of the catheter; contains much albumen and pus.

Dec. 3.—Urine was passed voluntarily for the first time, but the power of doing so again disappeared.

Dec. 11.—The constant galvanic current was passed through the abdominal walls and through the bladder (6–14 cells used), and repeated daily till the patient left the hospital. She almost immediately acquired control over her urine; the probe showed the bladder to measure at different times from 6–9¾ inches.

The amount of urine passed daily from November 28 to December 22 varied from 2¾ to 5½ pints, the average being 4⅖ pints per diem. The specific gravity was from 1007–1015 on different days.

When the patient left the hospital she had perfect control over her bladder; the sound entered nine inches when it was empty.

J. H., æt. 29; married nine years; four children; all footlings and born dead; great difficulty in delivering the head. In the last confinement the child was removed with instruments at the seventh month. Last menstruation on February 3. Admitted to "Martha," May 21, 1879. Pregnant three and a half months.

History.—Five weeks ago was dragging a heavy weight when she felt something give way in her abdomen, and for four weeks there has been great difficulty in micturition, a catheter being often required. On admission the uterus was found to be enlarged and retroverted, the cervix being above the symphysis.

The patient was placed under gas and æther, and a pyriform air-bag introduced into the rectum and distended with air. Two fingers were then introduced into the vagina, and slight pressure with them replaced the uterus. After reposition, the promontory of the sacrum was felt immediately behind the fundus, showing considerable narrowing of the conjugate.

The os uteri was found patulous and some bloody mucus escaped from it. As she became conscious after the anæsthetic, she strained violently so as to force the bag out of the rectum. Labour pains soon after set in, and a fœtus was expelled at 8.15 P.M.

The placenta remaining in, a drachm of ergot was given, and an attempt made to excite uterine action by the injection of 1–100 solution of carbolic acid.

As soon as the catheter was introduced into the uterus she became faint, and by the time the injection was finished (two minutes) she had ceased to breathe and lay pulseless. Artificial respiration, brandy, and the battery brought her round by degrees. The placenta came away in pieces.

May 22.—A Barnes's bag was introduced into the cervix and distended; patient has passed water, and is in no great pain.

The pelvis was measured with a pelvimeter. Conjugata externa = $6\frac{1}{4}$ inches. Crests of iliac bones = $10\frac{1}{4}$ inches. Iliac spines = $9\frac{3}{4}$ inches. Conjugata vera = $2\frac{1}{2}$ inches. The uterus has never contracted properly since the fœtus was expelled. More bits of placenta came away through the distended os.

May 23.—Fair night; no rigors; no hæmorrhage; slight, not fetid discharge; tongue coated, moist; passed urine in natural way; pulse 112.

May 27.—Dr. Matthews Duncan examined. Uterus is bulky but undergoing involution; it is retroverted to such a degree that the fundus is lower than the cervix.

June 1.—Discharged well.

M. H., æt. 30; admitted to "Martha," November 29, 1882; married three and a half months; no children; no miscarriages; catemenia commenced at 15; regular; last occurrence four days after marriage.

Pregnant three and a half months. Ten days ago she went to pass water, but found she could not do so. No previous difficulty. From that time till admission her urine dribbled from her; there was also much pain in lower abdomen. Not troubled with constipation. She came to the hospital complaining that her water dribbled from her, and in the out-patient room four and a half pints were drawn off by the catheter (urine acid, sp. gr. 1018, some albumen). The uterus was found to be retroverted, but was very easily replaced after evacuation of the bladder.

Dec. 1.—Urine acid, 1012, trace of albumen. The fundus uteri is in its proper position, though rather tender; she requires the catheter regularly.

Dec. 5.—Some urine is passed when the bowels act, but the catheter is passed at intervals, as no urine is passed voluntarily. The average amount is $2\frac{1}{2}$ pints per diem. Dr. Matthews Duncan found the bladder to measure eight inches.

Dec. 16.—The bladder measures $5\frac{1}{2}$ inches; it remains paralysed; the catheter is needed several times every day. Urine 1010, acid, no albumen, no pus.

Jan. 11.—She is still unable to micturate voluntarily; galvanic current passed for two minutes from lumbar region to pubic and perineal regions.

Jan. 12.—Galvanised again.

Jan. 13.—Passed water twice without the bowels acting.

Jan. 19.—Discharged well.

Her temperature was slightly raised for the first four days, but afterwards normal.

E. G., æt. 41 ; married nineteen years ; five children ; last one eight years ago; no miscarriages; menstruation regular; last period four and a half months ago.

Admitted to "Mary," August 28, 1883.

Pregnant, but has felt no morning sickness nor quickening; has noticed enlargement of abdomen for about two months. Seven or eight weeks ago thinks she was "twisted."

A month ago she began to micturate involuntarily night and day, and found herself unable to pass water naturally, except on hands and knees. She also noticed a lump in her abdomen, which seemed to move about as she moved ; it continned to swell until admission.

She has been in bed for a month, the urine constantly dribbling, and her bowels being very costive in spite of purgatives. A doctor who was called in at that time diagnosed "inflammation of the kidneys."

The night before admission she had cold shivers, vomited a little blood, and complained of great pain in sacrum and hypogastric region.

On admission, the abdomen was occupied by a tender elastic swelling, dull to percussion, and reaching as high as the navel; the skin over it was œdematous and shiny. There was much œdema of the labia, and great laxity of the posterior vaginal wall; no cervix could be felt, but the pelvis was occupied by an elastic tumour. Slight anasarca of both legs.

Nine pints of urine were drawn off, and the tumour disappeared; there was some pus in that last drawn; no blood ; smell ammoniacal.

She was put in the latero-prone position and anæsthetised. Dr. Collins drew off two pints more of bloody urine, and on examination per vaginam found the cervix uteri very high up above the symphysis, and bimanually felt an elastic tumour occupying the pelvis, which was evidently an enlarged retroverted uterus.

Aug. 28.—On introducing the hand into the vagina and applying slight pressure, reduction was effected. The cervix returned to its normal situation and a ring pessary was inserted to keep it there. Patient was told to lie in the latero-prone position at intervals. Temp. M. 101°, E. 101°.

Aug. 29.—Dozed during the night; could pass no urine, but $4\frac{1}{2}$ pints were drawn off by the catheter (sp. gr. 1008, faintly acid, bloody, $\frac{1}{4}$ albumen). Temp. M. 100.3°, E. 103°. Uterus remains in its natural position.

Aug. 30.—Had an attack of dyspnœa last night. Urine, $3\frac{1}{2}$ pints, 1011, acid, pus, again drawn off. Complains of thirst and headache. Anasarca of legs less. Temp. M. 100.3°, E. 100.8°, P. 108, R. 48.

Aug. 31.—Catheter drew off $4\frac{1}{2}$ pints of urine (alk. sp. gr.

1010, ammoniacal). Dyspnœa kept her awake; there is some pleuritic friction in the left axilla. Temp. M. 99.8°, E. 101.4°.

Sept. 1.—Urine 3½ pints, 1014, ¼ albumen, $\frac{1}{20}$ pus, ammoniacal. Much tympanites. Temp. M. 97.4°, E. 98.5°.

Sept. 2.—Temp. M. 98.8°, E. 98.6°.

Sept. 3.—A small quantity of urine was passed for the first time without the catheter, the remainder (3½ pints) with its help. Temp. M. 97.7°, E. 99.4°. The urine was very offensive and alkaline. No pain, but was sick twice. P. 108, R. 32. The bladder was washed out with Condy and water.

Sept. 4.—No catheter was required this morning; passed ℥vi. voluntarily. Sick again, tongue dry; very restless and drowsy; almost in the typhoid state. Bladder again washed out. Temp. M. 97.4°, E. 96.4°.

Sept. 5.—Abortion took place and a fœtus about three months old was expelled; placenta came away apparently entire. Condy douche ordered.

9 P.M.—Looks ill. P. 132, small. Nutrient suppositories administered. Bladder washed out; urine bloody and ammoniacal. Temp. M. 98.5°, E. 98.8 .

Sept. 6.—Had a restless night; in typhoidal condition; takes badly; bladder washed out. Temp. M. 99.9°, E. 97.7°.

Sept. 7.—Feet very cold; unconscious, comatose. Temp. M. 101.8°.

8.30 A.M.—Died.

Post-mortem.—Body well nourished; head and thorax not opened. Abdomen: no signs of peritonitis except some injection of blood-vessels over the bladder. Bladder nearly empty; mucous membrane absent; walls thick; some bloody slime on the exposed muscular layer. Orifices of ureters swollen; no signs of necrosis anywhere; the mucous membrane presents an ashy-grey colour. Uterus retroverted; walls an inch thick; cavity empty; measures 3¼ inches. The decidua vera lines it; no placenta left; corpus luteum in the right ovary. Kidneys swollen, soft, almost diffluent; stellate veins on surface, engorged with dark blood; their pelves are much injected.

M. F., æt. 32; admitted March 9, 1883; married nine years; one child seven years ago; no miscarriages; catamenia commenced at 14; regular; last occurrence four months ago; she thinks herself four months pregnant. Patient was well till a month ago, when difficulty in micturition and pain in abdomen came on. Her abdomen began to swell about three days before admission.

She came to the surgery on March 6 with the symptoms of retention of urine and six pints were drawn off (sp. gr. 1003, neutral, no albumen). The uterus was found completely retroverted, but easily replaced. The probe passed in 3½ inches.

On March 9 she again came to the surgery, and 5 pints 6 oz. of urine (sp. gr. 1002, alkaline, trace of albumen) were drawn off. She was admitted to Martha Ward, and the uterus again replaced. The same evening some blood was passed in the urine, of which 5½ pints more were drawn off.

Mar. 10.—8½ pints of urine passed in the twenty-four hours (sp. gr. 1001, alk., containing some blood and albumen.) Uterus was again found retroverted and easily replaced. Slept well last night; no pain. The abdominal walls are œdematous and also the labia.

Mar. 11.—The uterus is almost in its natural situation, it presents the signs of about a four months' pregnancy. Urine 4½ pints, alkaline, sp. gr. 1012.

Mar. 12.—Four pints of urine passed.

Mar. 13.—Abortion took place, the fœtus coming away in pieces, and a quantity of membranes being left behind. The cavity of the uterus was washed out with carbolic acid. The urine to-day amounts to two pints (neutral, sp. gr. 1016, no alb.).

Mar. 14, 15, 16.—The vagina is washed out daily. Urine alkaline, 1020, no albumen, trace of pus.

Mar. 17, 18, 19.—Urine ammoniacal, 1020; some pus in it; micturition frequent.

Mar. 20.—Tenderness and pain above the pubes; urine contains much blood; is normal in quantity; much stringy mucus in it.

Mar. 22.—Patient is much better; does not complain of any pain in passing water. Urine 1015, faintly alkaline; trace of alb.; no blood.

Mar. 27.—Discharged well.

In this case the temperature was normal till the abortion took place, when it rose to 104.8°, and fell again to nearly normal. A slight rise again occurred on March 20, concurrently with the symptoms of cystitis.

A. H., æt. 21; admitted August 13, 1879; has been married four years; one child two years ago; no miscarriage. She says that "her womb came down twice" about six months after her last confinement. Catamenia commenced at 12, since then have recurred every two or three weeks except when pregnant. She has seen nothing for more than three months.

Two weeks ago, after exertion, difficulty in making water came on suddenly; also difficulty in defæcation. These symptoms have persisted since they came on. A week ago she noticed a red vaginal discharge, which increased very much on the day before her admission.

She came to the hospital complaining of retention of urine, and 1½ pint of urine was drawn off. The cervix uteri was found to

be drawn up behind the symphysis, and impacted in the pelvic cavity was a large tumour, which further examination showed to be the pregnant uterus. Her bowels have not been open for three days. P. 100; Temp. 100.2°. On admission an attempt was made to replace the retroverted uterus, but it was unsuccessful.

Aug. 14.—Abortion was brought on by dilating the cervix with Barnes's bag, the fœtus being extracted feet first.

Aug. 17.—Going on well.

Aug. 25.—Feels quite well; gets up.

A. H., æt. 24.

This patient was in "Martha" fourteen months ago suffering from retention of urine caused by retroversion of the gravid uterus. The womb was found to be tightly jammed in the pelvis, and as reduction could not be effected, abortion was brought on.

She thinks herself pregnant three months. A fortnight ago she says that her womb suddenly fell down while she was walking. Three days ago she became unable to pass her urine, and yesterday it was drawn off by the catheter.

On coming to the out-patient room this morning, the uterus was found retroflected and low in the pelvis; the bladder was enormously distended, and four pints of urine were drawn off.

Patient was admitted into "Martha" (Nov. 6, 1880). Dr. Matthews Duncan found the abdomen tumid, resonant on percussion to within an inch of the pubes. *Per vaginam.*—Cervix uteri behind the lower margin of the symphysis, and flected on the body of the uterus, which occupies a large part of the excavation of the pelvis, but does not descend to the floor. The body could not be completely replaced by the finger.

Nov. 7.—Body again retroflexed, but easily replaced by pressing up the fundus per vaginam.

Nov. 9.—Uterus again retroflexed, but replaced by putting the patient in the genu-pectoral position. No. 6 Greenhalgh's pessary inserted.

Nov. 12.—Uterus slightly retroflexed; a larger pessary introduced, which kept it in its place.

Nov. 14.—She got up yesterday, and now the retroflexion is as bad as ever. The replacement, however, is easy.

This patient went out of the hospital quite well, as far as symptoms are concerned.

E. B., æt. 27; admitted to "Martha," August 30, 1883; married; two children; last eighteen months ago; one miscarriage a year ago; menstruation regular till May 20, since when has seen nothing. Pregnant three and a half months; does not remember any recent fall or other accident.

Two weeks ago she suddenly found herself unable to pass urine, and it has dribbled from her ever since; she can only pass any considerable quantity by squeezing her abdomen. Bowels costive. In the Surgery fifty-four ounces were drawn off (sp. gr. 1011, ammoniacal; some pus and albumen). There was vigorous contraction of the bladder during the evacuation. Great anasarca of both legs. On admission she was put under æther, and a thorough examination made. *Per vaginam* an elastic tumour was felt occupying the pelvis, and the posterior vaginal wall very lax. The cervix uteri was very high up behind the symphysis. Dr. Collins easily reduced the uterus with two fingers in the vagina, and found the conjugata vera contracted to $3\frac{1}{2}$ inches. She was told to lie on her face and sides alternately.

Seven hours afterwards she passed urine (one pint) by herself.

Aug. 31.—Urine 1010, acid; some pus and albumen. Catheter not necessary; anasarca of legs is less; amount of urine passed in twenty-four hours is $2\frac{1}{2}$ pints. There is wide separation of the recti.

Sept. 10.—Cervix in its natural situation; uterus enlarged to the size of a $4\frac{1}{2}$ months' pregnancy. Urine acid, 1015; no albumen. Discharged well.

M. A. B., æt. 31; married twelve years; four children; four miscarriages, last one five months ago; menses commenced at 16, regular; no definite menstrual period since last miscarriage.

A week ago she was suddenly seized with pain in lower part of back and abdomen, which has continued ever since; during the same period micturition has been difficult. Bowels open regularly all the time.

Admitted to "Martha," October 8, 1883, when $4\frac{1}{2}$ pints of urine were drawn off (sp. gr. 1012, acid; no albumen). On examination *per vaginam*, the cervix was found to be very high, and drawn up behind the symphysis pubis; the posterior vaginal wall was very lax. Behind the cervix the distended uterus could be distinctly felt as a large rounded soft elastic mass. An attempt was at once made to replace it, but unsuccessfully, and she was ordered to lie face downwards at intervals. The following day Dr. Matthews Duncan, after applying considerable force *per vaginam*, succeeded in reducing the uterus; the cervix at once returned to its normal position and the swelling behind it disappeared.

Oct. 10.—She can pass her water in the natural way; no polyuria; no pain. Specific gravity 1021, acid; trace of albumen.

The bladder measures $5\frac{1}{2}$ inches.

The patient was kept in bed for a fortnight to prevent any recurrence of the displacement. No bad symptoms appeared, and on October 26 she was discharged well.

Number of Case.	Initials of the Patient.	Duration of Pregnancy.	Amount of Urine Drawn off.	Œdema of Legs Present or not.	State of the Bowels during Retroversion.	Cause of Accident.	Reduction of Uterus and how Done.	Complaint on Admission.	Characters of the Urine Drawn off.	Duration of Difficult Micturition before Replacement.	Time when Bladder Regained Power of Contracting.	Did Abortion Follow the Accident?	Size of the Bladder.	Result.
I.	E. G	4½ mths.	8 pints.	...	Open.	Unknown.	Spontaneous.	Retention of urine.	1010 1005 blood and albumen. 1st day; 2d day;	1 week.	3 weeks.	No.	9 in.	Recovery.
II.	S. H.	3½ mths.	...	...	...	Dragging a weight.	Easy; bag in rectum.	Difficult micturition.	...	4 weeks.	2 days.	Yes.	...	Recovery.
III.	M. H.	3½ mths.	4½ pints.	...	Open.	...	Easy.	Dribbling of urine.	1018 1012 acid, some albumen. 1st day; 2d day;	10 days.	6 weeks.	No.	8 in.	Recovery.
IV.	E. G.	4½ mths.	9 pints.	Slight.	Costive.	Unknown; ? a twist.	Easy.	Swelled stomach.	1008, alkaline; no pus and blood. albumen;	1 mth.	Never.	Yes.	...	Death.
V.	M. F.	4 mths.	6 pints.	None.	...	Unknown.	Not easy.	Retention of urine.	1002 no albumen; blood on 2d day. alkaline;	1 mth.	A few hours.	Yes.	...	Recovery.
VI.	A. H.	3 mths.	1½ pint.	...	Costive.	Exertion.	Could not be done.	Retention of urine.	...	2 weeks.	...	Yes.	...	Recovery.
VII.	A. H.	3 mths.	4 pints.	...	...	Unknown.	Easy.	Retention of urine.	...	2 weeks.	...	No.	...	Recovery.

Number of Case.	Initials of the Patient.	Duration of Pregnancy.	Amount of Urine Drawn off.	Œdema of Legs Present or not.	State of the Bowels during Retroversion.	Cause of Accident.	Reduction of Uterus and how Done.	Complaint on Admission.	Characters of the Urine Drawn off.	Duration of Difficult Micturition before Replacement.	Time when Bladder Regained Power of Contracting.	Did Abortion Follow the Accident?	Size of the Bladder.	Result.
VIII.	E. B.	3½ mths.	56 oz.	Great.	Costive.	Unknown.	Easy.	Retention of urine.	1011, alkaline; trace of albumen and pus.	2 weeks.	A few hours.	No.	...	Recovery.
IX.	M. A. B.	4½ mths.	4½ pints.	None.	Open.	Unknown.	Difficult.	Retention of urine.	1012, acid; no albumen or blood.	7 days.	1 day.	No.	5½ in.	Recovery.
X.	J. B.	3 mths.	...	...	...	Unknown.	Easy by an air-bag in rectum.	Retention.	...	...	...	Yes.	...	Recovery.
XI.	M. B.	3 mths.	5 pints.	None.	Costive.	Unknown.	Easy by stethoscope in vagina.	Retention.	1010, neutral; no albumen.	6 days.	1 day.	No.	...	Recovery.
XII.	L. K.	4 mths.	...	None.	...	Unknown.	Difficult.	Difficult micturition.	...	2 weeks.	2 days.	No.	...	Recovery.
XIII.	A. H.	4–5 mths.	5 pints.	None.	...	Unknown.	Easy by an air-bag in rectum.	Retention.	1015, some albumen, blood, and pus.	2 weeks.	6 days.	No.	...	Recovery.
XIV.	C. H.	4–5 mths.	5¾ pints.	...	...	Unknown.	Spontaneous.	Retention.	...	7 days.	...	No.	8½ in.	Recovery.
XV.	M. A. B.	4½ mths.	4 pints.	...	Open.	Lifting a weight.	Easy.	Retention and dribbling.	1010, alkaline; no albumen.	2 weeks.	1 day.	No.	...	Recovery.

Remarks.

Many points of interest in connection with "Retroversion of the Gravid Uterus" are illustrated by the history of the cases related above, and by the table which follows them.

In each case, pregnancy had advanced to a period between three and five months (*vide* Column III. in the table). Before the end of the third month the impregnated uterus is so small, that if retroversion occurs—and doubtless it often does occur—no symptoms are produced. After the fifth month the uterus is too large to be contained in the pelvic cavity, and retroversion is impossible.

Another column shows that the great symptom of this disease is retention of urine. If urine were not retained, the uterus would grow up out of the pelvis, and the woman know nothing of the displacement that had occurred.

As it is, she complains that she cannot pass her water, or that it constantly dribbles from her. Pain is rarely mentioned; that due to distension of the bladder has, as a rule, long passed by. For instance, in Case IV., the woman had no pain though her bladder held nine pints of urine. Retention of urine in women apart from labour is not a very common symptom, though there are many causes which may lead to it.[1] In a recent case in "Martha," it resulted from distension of the vagina by retained menses in a girl of 13; but in retroversion of the gravid uterus it is the symptom which calls attention to the displacement.

The woman may be continually passing water and yet her bladder contain pints of urine; she suffers from the dribbling of an over-distended bladder. An erroneous diagnosis from not remembering this may be fatal (cf. Case IV.)

Column IV. in my table shows the quantity of urine drawn off. It is almost always large, and varies from $1\frac{1}{2}$–9 pints. Its characters are noticeable (see Column X.) The specific gravity is low, sometimes very low. In one instance (Case V.) the urine only contained .4 per cent. of solids, instead of the average 4 per cent. It is therefore greatly diluted, and large quantities are secreted. There is polyuria in this as in other forms of retention. In Case V., $8\frac{1}{2}$ pints of urine were passed during the twenty-four hours succeeding the replacement of the uterus; in Case I. an average of $4\frac{2}{3}$ pints per diem were secreted for over three weeks.

Some albumen is often present in the urine, but pus is rare. In the three cases where the largest amount of urine was drawn off, some blood came with it; and it suggests the question whether it is wise to draw off such enormous quantities as 8 or 9 pints

[1] Cf. Dr. J. Matthews Duncan's Lecture on Retention of Urine.

all at once? whether the sudden and great diminution of pressure inside the bladder may not be injurious?

Constipation, like pain, is not a constant symptom in the retroversion we are speaking of. It is recorded as having occurred in four cases only. Supposing that the pressure on the rectum is equal to that on the urethra, the bowel is better able to overcome resistance to the expulsion of its contents than the bladder.

Œdema of the legs is noticed in some cases; in others, œdema of the abdominal walls and of the labia.

The cause of the accident and the time of its occurrence are usually unknown to the patient (see Column VII.), and even where a supposed cause is given, no importance was attached to it at the time of the accident. The displacement therefore causes no pain in itself.

The uterus may in some cases have been retroverted (or retroflexed) before impregnation. We have no statistics on which to base an opinion, but in No. VII. (A. H.), it was found to be so after the uterus had been emptied by abortion; and it is noteworthy that in this case retroversion occurred in two successive pregnancies.

As to the comparative frequency of version and flexion I cannot speak; in one case only could flexion be distinctly diagnosed. It is difficult to say in many cases how long the uterus has been retroverted before symptoms are produced, but I have thought it worth while to give the period during which difficulty in micturating has been experienced.

In reference to the diagnosis, there is little difficulty if a thorough examination is made; its importance however is well illustrated by Case IV.; the physical signs are given in the clinical history of each case.

Reduction in twelve cases was easy; in two of these, after evacuation of the bladder, spontaneous; in two others an air-bag was introduced into the rectum and inflated; in the remaining eight, pressure per vaginam was effectual.

In two cases great force was required, and in one the replacement could not be effected.

Out of the whole number, fourteen recovered, the fatal issue in the fifteenth being due to the consequences of lengthy retention of urine.

In two cases out of fifteen, the pelvis was found to have a contracted conjugate. Abortion occurred three times spontaneously after replacement; once it was brought on because the efforts to replace were unsuccessful, and in the fifth case it was probably due to the introduction of a probe into the uterus.

TWO CASES FROM DR. ANDREW'S WARDS.

BY

R. J. COLLYNS.

I.—*Notes on a Case of Pneumonia and Pyœmia, with Abscesses in the Brain and Liver.*

J. F., aged 23, stationary engine-driver, admitted to Mark Ward on August 6, 1883.

The patient said he had always enjoyed good health up to the present time. His work sometimes exposed him to foul emanations from cesspools, &c., but he had not experienced this for some months. He gave no history of any family disease.

His illness began on July 30 with malaise and pain in the right side, followed by cough a few days later, and rigors on August 1.

He came to the hospital with a certificate from his medical attendant, stating that he was suffering from pneumonia.

On admission his expression was one of anxiety and distress. He was breathing hurriedly, he coughed much; the expectoration was tenacious and "rusty." Temperature 99.6°. Pulse 128, fair volume, regular. Tongue heavily furred, and there was diarrhœa, the motions being like those of typhoid fever. Physical examination of the chest discovered the presence of consolidation (pneumonic) of the base of the right lung and inflammation of the right pleura. The abdomen was distended and tympanitic. No albuminuria.

The patient remained in this condition on August 7. The diarrhœa continued. Temperature both in the morning and evening was 100.6°.

On August 8 the patient had two rigors, during which the temperature rose to 103°, the pulse 104, and respiration 60 per minute.

On August 11 the patient had another rigor, with temperature 105°. Since the rigor on 8th, the temperature had been 103° at

night and 99.6° in the mornings. The man's condition and physical signs remained almost unchanged.

In the evening of 12th another rigor.

On the 16th the patient seemed rather better. He was breathing more easily and the cough was less troublesome. The consolidation of the lung was clearing away, and pleural friction was no longer heard. There had been no rigor since the 12th, and the temperature had ranged between 98.4° and 102°; but in the evening of the 16th it reached 104°, and next morning it was 103.6°. The patient was not so well; he was drowsy and apathetic, and refused to take food. Diarrhœa was less, and the urine contained a trace of albumen.

On 18th he was still worse. Face flushed, sordes on lips and teeth, tongue dry and heavily furred, pulse 108, small, weak, and compressible; temperature 102.6°. Though the diarrhœa continued and the motions were still suggestive of typhoid fever, there were no other symptoms of abdominal disease.

On 19th quinine was given in four-grain doses every six hours, and the temperature was reduced from 103.4° to 99.6°.

On 20th the dose of quinine was increased to ten grains every four hours. The temperature, which had again reached 103.4°, was reduced to 99.2° on 21st, but the man was worse. He had been in the "typhoid state" since 18th; he seemed to hear nothing, and could not be roused to answer questions. He was lying with his neck fully extended and rigid, and his hips and knees flexed in the position of a person with meningitis. He vomited often, hiccough constantly recurred, and he took food badly. The evacuations were passed unconsciously.

On 22d the man remained in the same state of coma, with his eyes open and turned towards the ceiling. He remained in this condition all the night.

On 23d there was right hemiplegia. Pupils equal, face drawn to the left, right arm completely paralysed, and the right leg partially so. There was carphology of the left hand, but no sign of sensation anywhere. From this time he gradually got worse, and died on the evening of 24th, with the thermometer at 102.4°.

Necropsy.—Body much emaciated.

In the brain there were three abscesses, each about the size of a Spanish nut, surrounded by ragged walls, and containing green pus. One was situated in the left half of the corpus callosum; it had burst through the roof of the left lateral ventricle and filled that cavity with pus. Pus had traversed the foramen of Monro into the third ventricle, thence it passed along the aqueduct of Sylvius into the fourth ventricle, and then into the subarachnoid space through the foramen of Magendie in the pia mater. Here

there was a collection of pus at the base of the brain, and pus had passed almost to the lowest part of the subarachnoid space of the cord. Another abscess was situated just outside the anterior part of the left corpus striatum and involved the anterior part of the internal capsule. The third abscess was found just behind the right optic thalamus.

In the right lobe of the liver, which was adherent to the diaphragm, there were three abscesses. One contained nearly a pint of pus, and the other two, which were in close relation with the large one, but did not communicate with it, contained one and two ounces respectively. In the large abscess and one of the small ones the pus was of the same green colour as that in the brain, in the other it was bile-stained.

The lower lobe of the right lung was much congested and sanious; purulent fluid exuded from the cut surfaces. There was no abscess in either lung. No other evidence of disease was found anywhere.

There is little doubt that this was a case of pyæmia, but whether the pneumonia was a distinct disease, and perhaps even the cause of the pyæmia, or whether it was simply one of the phenomena of that disease, is not so certain. The facts that there were no symptoms which led the medical man who had attended the patient prior to admission to suspect more than ordinary pneumonia, and that the rigors and high temperature did not begin until the third day after admission, lend support to the former view.

There was at first some difficulty in the diagnosis from typhoid fever. The evacuations from the bowels were very suggestive of this disease, and the abdomen was distended and rather tender. As the disease advanced, however, the diagnosis of pyæmia was made, and the hemiplegia and other cerebral symptoms were attributed to abscess in the brain. The necropsy verified this opinion, whilst it negatived the idea of typhoid fever. There were no symptoms or physical signs during life which led one to suspect the presence of hepatic abscess.

II.—*Notes on a Case of Anæmia and Continued Pyrexia with Enteritis and Ulceration of the Epiglottis.*

H. A., aged 20, machinist, admitted to Hope Ward on September 3, 1883.

The patient said she had been ailing, and had been troubled with a dry cough for three months. She had never been ill except when she had smallpox two years ago.

On August 31 she suffered from heats and chills. She felt sick and experienced pain in the left side of the chest.

On admission the girl was very anæmic and rather prostrate, with rapid and weak pulse, and frequent shallow respiration. Physical examination discovered a distinct double pulsation in the veins of the neck, and "bruit de diable" on both sides. A soft systolic murmur was heard at the apex of the heart and over the upper part of the sternum. This was due, I suppose, to the extreme anæmia, and perhaps in part to tricuspid regurgitation. Signs of slight bronchial catarrh of both lungs were present; the râles were most abundant at the left base, and here, too, the percussion note was somewhat impaired. There were no other physical signs of disease. Temperature 105°.

On September 6 the patient complained very much of sore throat; the voice was husky, and there was pain on swallowing. The tonsils and fauces were swollen, and congested slightly. The bowels had acted twice since admission; the motions were fluid and contained some mucus. After much coughing she expectorated a few pellets of tenacious and fœtid mucus; generally only one such pellet was expectorated in twenty-four hours. She took food well and slept fairly. The temperature was taken every hour, and was invariably between 104° and 105°, except when reduced by sponging. The patient's general condition remained much as on admission.

On the 8th there was no change. The patient still complained of pain in the throat, which was in excess of any morbid condition which could be seen on looking into the fauces. The bowels had acted frequently, the motions were formed and of light yellow colour. The temperature had continued almost constantly at 104°. At 5 P.M. a cold bath was given, which reduced the temperature to 98.4°, but in three hours' time it had become 104.4°. The cold bath was repeated on the 9th, 10th, and 11th, with the same effect on the temperature, and only a very temporary improvement in the condition of the patient. After the bath on the 11th the patient had a severe rigor, and the shivering lasted for two or three hours. The general condition of the patient was unchanged. The sore throat continued, the cough got less, and no more pellets of mucus had been expectorated for some days. The bowels were open five times daily, the motions solid and light yellow. Twenty grains of sulphate of quinine were taken in five-grain doses every two hours, and the temperature was thereby reduced to 102°.

The quinine was repeated on the 12th and five following days, whenever the temperature reached 104°. It always produced the same effect on the temperature, which was reduced four or five degrees, but rapidly increased when the quinine was left off. The patient's condition, however, was not improved. She was generally

drowsy, and sometimes slightly delirious. She vomited bilious matter occasionally, but continued to take food well. Sometimes she shivered and said she felt cold.

On the 18th the temperature reached 106° at 6.30 P.M., but fell to 101 after two doses of quinine of ten grains each.

On the 19th at 1 P.M. the temperature was again 106°, and was again reduced by quinine. The patient was not so well; she had vomited often and retained but little food. The bowels, which had not acted for six days, were relieved by an enema, which brought away several clay-coloured lumps of fæces. The abdominal tenderness, which had existed for the last few days, was also relieved.

On the 20th the patient was still worse; she was breathing hurriedly and with some difficulty, and she was much collapsed. Physical examination of the chest found signs of consolidation of the apex of the right lung with fine crepitation (pneumonia), and below the third rib on this side pleural friction was heard. The heart sounds remained as on admission, and râles were still heard over all parts of the chest. The patient expectorated another pellet of mucus, which was blood-stained. At 5 P.M. she was put into a cold pack, and the temperature was reduced from 105° to 104°. After this the patient slept for a few hours and perspired, and the temperature was further reduced to 102.2°.

From this date up to the time of her death, at 1.40 A.M. on September 24, the patient gradually got worse. The consolidation of the lung extended a little, but no fresh signs of disease were developed. The patient was occasionally delirious and sometimes vomited, but retained nutritive enemata. On the 23d she became speechless and extremely collapsed, the respirations very frequent and shallow, the pulse very rapid and feeble, but consciousness was retained up to the time of the patient's death. The temperature since the 21st had ranged between 100° and 102°, and called for no treatment.

Necropsy.—The body was not much emaciated. There was superficial ulceration along the free margin of the epiglottis for its whole length.

Both pleural cavities contained a few ounces of serous fluid, and there were two or three ounces in the pericardium. There were signs of recent pleurisy with exudation of lymph on the right side. There was slight bronchial catarrh on both sides. The upper lobe of the right lung was hepatised; the third stage of pneumonia had commenced. There was no cavity in either lung and no tubercle.

Heart and kidneys normal.

Liver and spleen enlarged, soft and pale.

Intestines.—The mesenteric glands were only slightly if at all

enlarged. The ileo-cæcal valve and the mucous membrane in the lowest part of the ileum were discoloured with pigment. Six or eight small superficial ulcers were found here and there in the small intestine for about two feet above the valve. They were no deeper than the mucous membrane; the edges were not undermined, and there were no sloughs; they measured two or three lines in diameter. Just above the ileo-cæcal valve there was a large ulcer about six lines long and three broad, its floor was formed by the muscular coat. These ulcers bore no relation to the solitary or agminated glands. There were besides some patches of congestion in the small intestines. Some of the solitary glands were enlarged, but not to the extent usually seen in typhoid fever.

Peyer's patches bore no trace of disease.

Large intestine normal.

Reproductive and urinary organs normal.

Brain normal.

The diagnosis of this case was extremely difficult. From the first there was great anæmia and slight bronchial catarrh, but no sufficient cause for the continued pyrexia could be discovered during life, nor did the necropsy remove the difficulty.

The pneumonia and pleurisy which developed during the last few days of her illness no doubt hastened the death of the patient very materially, but these conditions must be regarded as the effect rather than the cause of high temperature in this case. Enteritis was probably present when the patient was admitted, for soon afterwards the motions contained mucus; but from the very slight abdominal symptoms during life and the post-mortem appearances, I should judge that the inflammation was not severe, and it is difficult to trace a connection between this affection and the pyrexia.

The possibility of the disease being typhoid fever suggests itself, more especially as there was ulceration of the epiglottis; but the symptoms and course of the case were not altogether those of enteric fever, nor did the post-mortem condition of the intestines support this view. The ulcers were not such as are usually seen in typhoid fever, nor was there any implication of Peyer's patches, and the solitary glands were only slightly enlarged. It may be, I suppose, that the enteritis with ulceration was the source of some septic infection, and septicæmia thus produced might explain the pyrexia and its attendant phenomena.

I cannot attribute the pyrexia to anæmia, but perhaps this case would be classed by some as one of "pernicious" or "essential anæmia."

HYDATIDS OF THE LIVER, WITH PASSAGE OF HYDATID MEMBRANES PER ANUM.

BY

H. LEWIS JONES, M.B.

Caroline H., 27, married, dealer in vegetables, was admitted into Mary Ward on May 9, 1883.

She was suckling a child four weeks old, and had been quite well until the evening of May 6, when she was seized with sharp pain in the right hypochondrium, extending to the angle of the right scapula. She vomited.

She attributed the pain to a fright which she received on May 4, from seeing a man run over in the street. The pains left her, but returned on the 7th and 8th, with occasional vomiting.

On May 9 noticed that her urine was of a dirty saffron colour, and that her face and chest were jaundiced.

She was seized with violent pains and vomiting as on May 6, and applied at the hospital in the afternoon. When first seen she was pale, in great pain, which she referred to the region of the liver, with tenderness there. Lips pale, mouth dry, body bent forward by the pain. Face and conjunctivæ jaundiced. She vomited in the surgery. Temperature 100°.

May 10.—Still jaundiced, but less so than yesterday. Urine deeply bile-stained. No apparent enlargement of the liver. Bowels not opened since May 7.

May 11.—Bowels moved twice after castor-oil. No gall-stones found in the motions, which were slightly bile-stained. Urine 1029, faintly alkaline; bile present. Heart and lungs natural.

May 12.—In the afternoon she passed with motions a small shred of membrane; it looked like hydatid membrane. Has diarrhœa. Jaundice gone.

May 13.—There is distinct tenderness over the left lobe of the liver. Diarrhœa continues, with hydatid membrane in the

stools; under the microscope the membrane shows the typical striated appearance.

At 10 P.M. great pain in both hypochondria, relieved by morphia.

May 15.—At 11 P.M. severe pain in left hypochondrium, which abated after an action of the bowels.

May 16.—Has passed about twenty hydatid membranes. Vomits almost daily.

May 17 and 18.—No pain either night. Diarrhœa continues.

May 19.—At 2 A.M. had an attack of severe pain, followed by a loose motion.

May 20.—Has had similar paroxysms of pain; diarrhœa continues; still passing hydatids.

May 21.—Rigor at 5 A.M. lasting half an hour, with severe pain, and followed by loose motion with hydatids. Temperature up to 105°.

May 23–28.—No rigors; no hydatids in the stools; diarrhœa continues; vomiting almost every day. On 26th had a slight attack of pain; no hydatids passed after it.

May 29.—Severe rigor at 11.30 on night of 28th. At 12 P.M. the temperature reached 106°; a motion containing cysts followed, and at 12.30 A.M. she was much relieved. Temperature then 104.8°; fell slowly to 103.8° at 1 A.M., when she slept until 4.30; at 10 A.M. is weak and exhausted.

May 30 to June 2.—No cysts. Urine acid; trace of albumen; no bile pigment. Vomiting and diarrhœa continue.

June 3.—Rigor with pains, terminating in a loose motion containing cysts.

June 6.—Rigor; no cysts in the loose motions which followed.

June 8.—Rigor.

June 9.—Stools examined for pus; none found.

June 11.—Has become much thinner and weaker, and her strength is failing. Rigor at 11 P.M.

June 12.—Subcutaneous ecchymoses on right side and over right great trochanter. No cysts.

June 13.—Evacuations passed involuntarily. Wanders at night. Cysts passed at 6 A.M.

June 14.—Pains and loose motions containing cysts.

June 16.—Urine contains a trace of albumen and some granular casts.

June 17.—Is very weak.

June 18.—Very weak.

June 19.—Died at 6 A.M.

Post-mortem examination by Dr. Moore.—Body lean. Abdomen full; no jaundice.

Lungs.—Lower lobe of left lung adherent to diaphragm and pneumonic. Right lung nil.

Heart natural.

Abdomen.—Body-wall adherent to sac of hydatid; no general peritonitis.

Liver.—The left lobe excavated by a hydatid cyst as large as a child's head; the whole front part of the lobe had disappeared, but there was some liver tissue behind. The cavity contained pus, and numerous large and small daughter cysts; an even-edged opening in it led into left duct, and so into duodenum, where the papilla was slightly enlarged and its opening patulous. In the middle of the anterior surface of the right lobe was a hydatid of walnut size containing daughter cysts, and in the outer part was another of the same size. The contents of both were bile-stained. No cyst actually in duct or gall-bladder.

Spleen enlarged and soft.

Kidneys large and firm, giving a slight amyloid reaction with tincture of iodine.

There are several interesting points in this case.

1. The sudden onset with colic and jaundice; this gave rise to a suspicion of gall-stone, for which the stools were searched, and the result was the discovery, not of a calculus, but of hydatid membranes.

2. There was no tumour felt in the region of the liver nor anywhere in the abdomen.

3. The rigors, paroxysmal pains, and diarrhœa which accompanied the passage of hydatid membrane.

4. The continued fever, which often reached 103° Fahr., and which suggested deep-seated suppuration as one of several possible causes.

5. She dealt in green vegetables, and kept her stock in the house in which she lived.

6. The passage of hydatid membrane per anum is uncommon.

Dr. Murchison (Lectures on Diseases of the Liver, 2d edit., p. 65) gives a case of hydatid tumour bursting into the bile duct, with discharge of numerous hydatid membranes per anum, and with jaundice which passed away, and colic. Post-mortem, a large cavity containing hydatids was found in the right lobe of the liver.

He also gives other cases in which hydatid membranes were passed per anum.

Dr. Gee's Note.—In the Museum is a specimen, No. 2252, showing a portion of the duodenum with a large hydatid rolled up and impacted in the common bile duct, which it dilates, and from which a portion protrudes into the intestine. The patient was a boy aged 14, under the care of Dr. Church. Three months before death he had signs of acute inflammation of the liver, and six days before death had acute pain in the right hypochondrium followed by jaundice. He was relieved for a time, but the pain recurred with greater severity, and he died delirious. There was a great cyst full of hydatids in the right lobe of the liver.

First, There were two points for diagnosis—

(1.) The position of the hydatids.

(2.) Their course into the intestine.

The obstruction to the escape of bile which produced the jaundice could be from without by pressure on the ducts, or from within by the blocking up of the ducts themselves, and the colic rather favoured the latter notion. On the other hand, the discharge of membranes so quickly followed the colic and rigors as to cause a suspicion of a more direct communication with the lower bowel, as by ulceration into the colon. The febrile condition admitted of two explanations—one that the hydatid cyst might have suppurated, the fever being symptomatic of a deep-seated abscess; the other that the fever was the "intermittent hepatic fever" which sometimes follows obstruction of the gall ducts, and which is probably dependent upon a chronic inflammation of the walls of the ducts both within and without the liver.

As a companion case to the above Dr. Gee kindly gives the following, that of a boy aged 8 years, whom he saw in consultation with Dr. Herbert Ilott in September 1882.

In June 1882 it was noticed that his belly was enlarging. In July he became jaundiced. When I (Dr. Gee) saw him, the jaundice was very deep. His stools were quite devoid of colour. His liver was very big; it reached as low as the iliac fossa on the right side. Its edge was pretty even; its surface was smooth, but we thought we could feel a flat bump in the middle of the right lobe. He sometimes had much pain in the region of the liver. The spleen was enlarged, but not greatly. The boy was wasted. There were no signs of hæmorrhage, ascites, or anasarca. His temperature was always raised a little, from 100° to 101°.

Here the two chief facts were the enlarged liver and the deep jaundice. Fatty and amyloid livers are sometimes very big, but

they seldom or never produce much jaundice. The remaining causes of a great enlargement of the liver are cancer, cirrhosis, and hydatids, and in all these diseases there may or may not be deep jaundice. Let us discuss these possibilities. Were we living in India, we must add hepatitis to this list; but hepatitis is not an English disease. First of cancer. Cancer of the liver is very uncommon in children, yet here I show you a very rare specimen,[1] which was sent to me by Mr. Anthony Henley, and which is a cancerous liver taken from a baby only five months old; so that in our case we are obliged to admit that cancer was a possible cause of the disease. Cancer often produces deep jaundice. The boy was wasted, and there was a suspicious flat bump to be felt on the enlarged liver, and this bump may have been a cancerous mass.

Secondly, Of cirrhosis. If this were the cause of the disease, it must have been the hypertrophic form of cirrhosis, for the liver in this case was greatly enlarged. Hypertrophic cirrhosis often, but not always, produces deep jaundice; so that we are obliged to admit that hypertrophic cirrhosis was a possible cause of the disease; and the boy had been a great deal in the way of alcohol; indeed there was no doubt that he had spirits given to him both by his father and his uncle, who were spirit-drinkers, but how much or how often we could not discover.

Lastly, Of hydatids. Hydatids do not often cause jaundice, yet they may do so. That flat bump felt on the liver may have been a deeply imbedded hydatid cyst. Hydatids of the liver are very much commoner in children than either cancer or cirrhosis is, and the boy's father was a greengrocer. Now you remember that in the case of Caroline H. the patient dealt in vegetables, and with regard to her Dr. Steavenson remarked that he had more than once noted the coincidence of hydatid disease in greengrocers or costermongers—a point worth bearing in mind. So that we were not able to make a diagnosis, and the nature of the disease remained uncertain, until one day the boy began to pass hydatid membranes from the bowel.[2] In a few days the discharge of hydatids ceased, the jaundice disappeared, the liver shrank to its natural size, and the boy is now, I believe, in perfect health.

[1] St. Bartholomew's Hospital Museum, Series 21, No. 2216.
[2] Specimen now in the Museum.

ON SCARLATINAL DROPSY WITH LITTLE OR NO ALBUMINURIA.

BY

DYCE DUCKWORTH, M.D.

A case, of which I shall immediately relate particulars, furnishes the text of this short communication. The subject is not a new one; several writers have alluded to it, but few have contributed facts or illustrative examples.

Cases of well-marked dropsy following scarlet fever are associated with albuminuria. This may be fairly taken as a regular clinical conjunction, and the exceptions to this are so rare that they are well worthy of record. The amount of albumen passed in ordinary cases is large, and blood in more or less quantity is usually present.

From Notes by Mr. James Berry, House-Physician, and Mr. Reginald Dudfield, Clinical Clerk.

W. W., aged 4 years 9 months, was admitted to Radcliffe Ward on October 3, 1883. His mother stated that five weeks ago he became ill, had sore throat and a rash all over him. He was kept in bed and not allowed to go out. Four other children and several others in the same house have scarlet fever. Three days ago his legs began to swell, then the face and the rest of the body. He had passed very little water lately, but the bowels had acted regularly. He was pale. Desquamation was proceeding on the extremities. Râles audible at the bases of the lungs. Temperature 99.2°. He was ordered milk-diet.

Oct. 4.—Had a bad night, much cough, and frequent retching. Is more swollen. Considerable lividity and dyspnœa. Has passed no urine since admission. Ordered a vapour bath, pulv. jalapæ co. gr. xv. statim, and some tinct. of digitalis

with acetate of ammonia. Later, a little urine was passed into the bed. Sweated profusely in the bath. The bowels not having acted and cyanosis continuing, the powder was repeated and the loins were dry-cupped. In four hours' time passed a good deal of water. Temperature normal; respiration 60; pulse very irregular and weak. Skin cold and dry. A sinapism applied to the back, and some brandy ordered, also two drachms of castor-oil. Respiration 70.

Oct. 5, 1 A.M.—Less livid. No more urine passed. Bladder empty.

1 P.M.—Has had sleep. Taking milk freely. Bowels relieved. Pulse 156. Has passed a good deal of urine into bed. Œdema less.

Oct. 6.—Had a good night. Respiration 45; pulse 120. Urine passed freely and collected for first time. Sp. gr. 1027; muddy with urates, and not bloody, and containing *only a faint trace of albumen.* Œdema diminished.

Oct. 7.—Passed seventeen ounces of urine, containing urates in abundance and but a trace of albumen. No renal elements found by microscope.

Oct. 8.—Temperature rose to 104.5° without obvious cause. Bowels open. Urine passed freely; *contains no albumen;* sp. gr. 1027; urates abundant.

Oct. 10.—Skin hot and dry. Œdema of face. Temperature 102°. Passed no urine during the day. At night some was passed and found to be void of albumen. No renal elements found under the microscope. Sp. gr. 1030. Temperature fell to 98° on 12th, and remained subnormal. Improvement followed steadily after this date. The dropsy gradually disappeared, and no albumen was again found in the urine, which varied in quantity from twenty to forty ounces daily.

He was ordered iron on the 17th October, and had minced mutton-chop on the 26th. On the 31st he was taken home.

Of the five children attacked in this family, this was the first case, and the only one that had dropsy. All the other children died of the disease.

Systematic writers who allude to the class of cases under consideration, refer to a remarkable series of examples described by Philippe of Berlin, sixty or more in number, in which, scarlatinal dropsy being present, no albumen was found in the urine.

Henoch[1] refers to an epidemic of scarlet fever observed by Fenini in Italy, in which frequently no albuminuria was found in cases of acute nephritis, but daily examination of the urine was not made.

[1] Berliner klinische Wochenschrift, 1873, No. 50.

Of Philippe's cases, Dr. Dickinson remarks that if they be trustworthy, scarlet fever in Berlin must be a very different malady from that known in this country.

Warburton Begbie,[1] whose name is often quoted in connection with the study of scarlatinal albuminuria, made no reference to cases of this kind.

Gee[2] mentions that in some epidemics dropsy without albuminuria at any period is common.

Niemeyer[3] remarked that "in some cases of very extensive scarlatinous dropsy without albuminuria, recovery takes place in a remarkably short time, as I know from my own observation."

Trousseau[4] made no reference to the subject.

Hillier[5] remarked that "dropsy without albuminuria has been observed in some epidemics. I have met with more than slight œdema without albuminuria. This may be due to anæmia."

F. Roberts[6] mentions as a complication of scarlet fever "dropsy without albuminuria, having no obvious cause."

Bristowe[7] states that "anasarca is sometimes developed in those who have never had albumen in the urine."

Dr. Todd[8] gives the details of a case of fatal dropsy in a boy aged six years after scarlet fever, in which for nine or more days the urine was quite free from albumen. Renal epithelium and casts were present in considerable quantity. He remarked that "it was quite clear, therefore, that there existed at this time an irritated state of the kidneys, which, when considered in conjunction with the other facts of the case, sufficiently explained the general dropsy." A few days later the urine was found to be scanty, highly albuminous, and slightly bloody. Vomiting ensued, and the child died.

Dr. Dickinson[9] has called attention to cases of this nature, and remarks that "albuminuria is not an invariable accompaniment of fatal nephritis resulting from scarlatina. It often happens that after scarlet fever the face may be puffy and traces of œdema noticeable in the limbs, while yet the urine, though perhaps concentrated and scanty, is free from albuminous change. After the first few days albumen generally appears, and gradually increases till it reaches a considerable amount. It is

[1] Selections from the Works of J. Warburton Begbie, edited by Dyce Duckworth, p. 4, New Syd. Soc., 1882.
[2] System of Medicine, *Reynolds*, vol. i. 1866, p. 347, art. Scarlet Fever.
[3] Text-Book of Pract. Med., vol. ii. p. 541, 1867.
[4] Clin. Med., 1865.
[5] Dis. of Children, 1868, p. 304.
[6] Theory and Pract. of Med., 5th edit., 1883.
[7] Theory and Pract. of Med., 4th edit., 1882.
[8] Clinical Lectures, Urinary Diseases, p. 178, 1857.
[9] Pathological Soc. Trans., vol. xxi., 1870, p. 263.

very uncommon for the urine under such circumstances to remain free from albumen throughout the course of the disease."

Bartels, in his elaborate article in Ziemssen's Cyclopædia,[1] remarks, "In every case of acute parenchymatous nephritis that I have seen, the urine has contained albumen, sometimes in small, sometimes in pretty considerable quantity." He then asks, Does the urine contain albumen in every stage of the inflammatory process? This question was forced upon him while watching some convalescents from scarlet fever. During an epidemic in 1853–54, he met with a few cases in which dropsy set in after scarlet fever, although the urine passed by the patients contained no albumen. Very little urine was excreted; in one case only one ounce in twenty-four hours. Soon afterwards abundant diuresis set in, while the dropsy increased, and subsequently the cases followed the ordinary course of scarlatinal nephritis.

From these observations Bartels concluded that there was nephritis when the urine became scanty, although there was no albuminuria. For twenty years he remained without proof of his surmise, and then a case described by Henoch furnished the evidence required.

The case is given at length. In abstract the particulars were as follows:—A robust boy, aged 12, admitted into the Charité at Berlin with œdema of face and scrotum of a few days' duration. History of scarlet fever three weeks previously. Desquamation present. Urine scanty, very acid, depositing sediment, but void of albumen. No renal elements in the deposit, only urates. During two following days increase of œdema; urine unaltered. A sudden and violent eclamptic attack ensued with unconsciousness, and the boy was cyanotic and cold. Urine drawn off third day after admission contained a large amount of albumen and numerous hyaline casts beset with fat granules. Next day consciousness returned, cyanosis continued. Death.

At the autopsy general dropsy found, and "extremely well-marked parenchymatous nephritis on both sides."

Henoch adds a second case of scarlatinal dropsy, in which the urine for two weeks sometimes contained albumen and sometimes did not.

Bartels ventures to explain the absence of albuminuria under these conditions, and his view is, that as the anatomical changes in the kidneys are so remarkably diffuse, the functions of those parts of the organs which are affected are entirely suspended, while the portions not yet implicated continue to secrete urine

[1] Eng. Trans., p. 276.

free from albumen. When the process is very wide-spread, there is total suppression of functional activity.

He agrees with Henoch that every case of dropsy after scarlet fever, even if unaccompanied by albuminuria, is to be regarded as due to nephritis, unless it can be fairly attributed to the severe febrile affection or to the consecutive anæmia. He never saw dropsy after scarlatina that was not due to nephritis.

Descroizilles[1] remarks that anasarca sometimes persists when the albumen has disappeared, and alludes to the occurrence of anasarca without albuminuria, believing it to be due to renal congestion, dependent on suppression of the function of the skin.

It is perhaps remarkable that suppression of urine is not more commonly met with in scarlatinal nephritis. The early and special implication of the Malpighian tufts would seem to necessitate a serious diminution or stoppage in secretion, pressure upon them arising from leucocytes, extravasated blood, and from new epithelial (intracapsular) growth. The fact of scarlet fever poison inducing this glomerulo-nephritis is now quite established, Klebs' original observations having been confirmed by many pathologists.[2]

But the same clinical feature, severe dropsy and anuria, are met with in cases of acute parenchymatous nephritis, in which the glomerular system is not primarily and specifically involved. Suppression of urine has been attributed to diminished secreting pressure in the tubes, owing to the epithelial swelling and the presence of casts; to the mechanical pressure exerted by the swollen tubes on the contiguous vessels, and to stasis in the capillaries as part of the inflammatory process. It is likely enough that diminished circulation will entail diminished secretion, but this result is probably due to no one of the particularly assigned causes, but to "the combined action of several, the value of each of which may vary in different cases. Change in the actual endowments of the secreting structures, obstruction to the ducts from internal and external pressure, the nisus of the gland being directed to development rather than to secretion, would be the principal ones, although the list might be indefinitely extended."[3]

When the first specimen of urine was secured and examined in my case, it naturally excited surprise that albumen existed in so trifling a degree, and repeated investigation was daily

[1] Manuel de Pathologie et de Clinique infantiles, Paris, 1883.

[2] The glomerular changes were described previously by Dr. Andrew, but not specially connected with scarlatinal nephritis, in his thesis for the M.D. degree at Oxford, p. 11. London: J. Adlard, 1864, "On the Relation between Anasarca and the Renal Affection at the Commencement of so-called Renal Dropsy."

[3] Andrew, *op. cit.*, p. 10.

instituted in consequence. The urine of all the cases in this ward, which is devoted exclusively to scarlet fever, is carefully and constantly examined, and therefore it may be fairly stated that instances such as that just described can hardly escape recognition when they occur.

There can be little doubt that they are of rare occurrence, and I cannot therefore agree with Dickinson when he remarks that such cases are often seen. The history of other cases goes to support his statement that the absence of albumen from the urine is but a transitory phase, and that it may be confidently expected to appear subsequently.

The aggregate of symptoms, too, in any given case, seems to justify the belief that there is acute nephritis present.

I have found two examples, however, recorded by Dr. Basham[1] and by Mr. Taylor,[2] in which acute dropsy was apparently induced by exposure to cold and damp without any albuminuria. Dr. Basham's case was in a man aged 26, who presented every sign of ordinary acute nephritis save the changes in the urine. No albumen appeared throughout the progress of the case, and complete recovery ensued in eighteen days. Dr. Basham had never seen a similar case. He believed the kidneys to be unaffected. Mr. Taylor's case occurred in a man aged 30, and was very similar to that just mentioned. Recovery from the dropsy occurred in less than a month. There was no mention of microscopical examination in either case.

I have met with several cases in young children and adults in which there was extreme anasarca and no albuminuria, neither was there any history or likelihood of previous scarlet fever, and no visceral disease of any kind detectable, save enlarged lymphatics. These cases all recovered. But the anasarca was the solitary obvious symptom, and it seemed fair to exclude the idea of acute nephritis. Renal disease may exist without anasarca, but the fact remains that the common rule is to find abundant albuminuria in cases presenting the ordinary characters of acute nephritis; and the only instances I have been able to find where no albumen was present under these conditions are those of scarlatinal nephritis. This points to the conclusion that there is something specifically peculiar in these cases, depending probably upon the scarlet fever poison. This may act either by the special involvement of the glomerular system in the kidney, whereby albumen is withheld from the urinary secretion for a time, or by inducing some peculiar blood-

[1] Lancet, 1867, vol. ii. p. 225.

[2] Med. Times and Gazette, 1871, vol. ii. p. 469. I am indebted to Dr. Neale's Medical Digest for these references.

change in which ordinary albumen is not separated in the kidneys, but some variety of it is yielded in its stead. Or, again, it may be that certain tracts of the kidneys cease to secrete in the acute stages, and others, not yet involved, continue to produce urine as yet unimpregnated with albumen. As has been shown, in every case of this nature that tends to recover, the urine ultimately becomes albuminous, and the ordinary characters of the disease are manifested.

ON THE PATHOLOGY AND TREATMENT OF SOME FORMS OF HEADACHE.

BY

T. LAUDER BRUNTON, M.D., F.R.S.

Of all the kinds of pain which afflict humanity, or at least civilised humanity, there is perhaps none which causes a greater amount of misery than headache. Although the pain of it may not unfrequently be slight, yet the number of people affected by it, the frequency of its recurrence, and the intensity which it sometimes attains, raises the total amount of pain produced by it to such an extent, that the means of relieving or curing it becomes a most important therapeutical question. We all know that the part of the nervous system by which sensations either of pleasure or pain are perceived is in the brain; for if communication between the head and the body or its parts is destroyed by section of a nerve or of the spinal cord, the individual is totally unconscious of any impressions made upon the periphery. The exact seat of sensation has been further localised by my friend Dr. Ferrier, who has ascertained that the destruction of the hippocampal convolution on the one side of the brain produces anæsthesia of the opposite side of the body, so that neither pinching nor touching with a hot iron gives rise to any evidence of sensation. We may therefore look upon the hippocampal convolution as the seat of sensation, at least for the surface of the body, whatever may be the seat of sensation for internal organs.

In a condition of health the sensory centres in the brain perceive no pain unless some injury is happening to a part of the body, and pain is thus a useful monitor, warning the individual to stop the mischief which is occurring before it be too late. In certain unhealthy conditions of the brain, however, the sensory centres in the brain may be so affected that pain is felt although no injurious process whatever is occurring in any part of the body. Such a condition is probably the explanation of what we find in hysteria,

when such intense pain may be felt in a joint, for example, as to induce the patient to insist upon the amputation of a perfectly healthy limb. In such a case as this the disease appears to be due entirely to alterations in the sensory centres in the brain, while the whole body appears to be healthy. I say *appears*, because, even in such cases it is possible, and indeed probable, that some morbid condition may be present which has escaped our notice, because there may have been little or nothing to direct our attention to it as the cause of the disease. But the sensory centres in the brain are securely lodged within the skull, and are not likely to undergo any morbid change unless it is started either by alterations in the quality or quantity of the blood circulating through them, or by impressions conveyed to them by afferent nerves. We find, as a rule, in the healthy body, that irritation of any part is felt in the place to which the irritant is applied, so that attention is consequently at once directed to it, and an effort made for its removal; but this is not always the case, for even in the healthy body we find it is sometimes difficult to localise an impression. Perhaps no better instance of this can be given than the bite of a flea, which is sometimes felt two or three inches from the real seat of irritation. In abnormal conditions this reference of irritation to a spot where no irritant is present may be greatly increased. In the case of hysterical pain in the knee-joint, to which I have already referred, the source of irritation is not in the knee, but is probably, to a considerable extent at least, in the sexual organs, from which afferent impulses proceed to the brain, and there induce morbid changes which are probably similar in kind to those which would have been caused by acute irritation in the knee-joint; pain is thus felt by the individual, and referred to the knee although the joint itself is perhaps healthy. When such a pain as this is felt by persons presenting certain general characteristics, we call it hysterical, but in its essentials it is simply neuralgic. The term neuralgia is a very convenient cloak for our ignorance, and we apply it as a rule to all acute pains for which we can find no apparent cause. A good deal of discussion has arisen regarding the nature of neuralgia, and several writers hold that neuralgic pain is of central origin. According to this view, we may look upon hysterical pain in the knee-joint as a most marked and typical neuralgic affection. This view is probably the true one so far as it goes, but it is imperfect, and will, I think, mislead us if we do not try to find out in all cases the peripheral origin of the central changes, for in minor neuralgias, as in the case of hysterical knee-joint, the changes in the brain are probably started by some irritation of sensory peripheral nerves. Thus pain in the temple is very frequently due to the irritation of a

decayed tooth. Sometimes a pain may be felt in the tooth as well as in the temple, just as in the ordinary experiment on the so-called funny bone, pain or tingling may be felt at the elbow where the ulnar nerve is twitched as well as in the fingers to which its terminal branches are distributed. Sometimes, however, this is not the case, and the pain is felt in the temple without any in the teeth. My attention was first directed to the relation between pain in the temple and decayed teeth many years ago. A servant of my brother's was suffering from toothache, but complained still more of intense pain in the temple. I did not know what to do for the pain in the temple, but thought the toothache might be relieved by applying solid carbolic acid on a pledget of cotton wool. I accordingly introduced this into a large cavity in one molar. To my great disappointment it gave no relief whatever. In the course of a very few minutes, however, her fellow-servants came running to tell me that cook was now quite free from pain; that she had taken the cotton wool out of the tooth into which I had put it and placed it in another decayed tooth, and at once the pain vanished both from the tooth and the temple. In this case the irritation of a decayed tooth had produced a two-fold pain—a pain felt in the tooth itself, and also one felt in the temple; but sometimes a decayed tooth will cause headache when no pain is felt in the tooth itself. I was first led to observe this by watching my own case. One day I was suffering from severe megrim, the pain being limited to the left temple; there was tenderness on pressure over the spot. On many other occasions I had noticed that the eyeball was tender at the same time, but on that occasion there was no tenderness of the eyeball. Passing my finger over the side of the head and face in the endeavour to find a second tender spot, I at last came upon one under the angle of the jaw. The tenderness here was due to a small gland, which was hard and painful to the touch. The occurrence of an enlarged gland at once led me to seek for the source of irritation in a district from which it received the lymphatic vessels, and I accordingly examined the mucous membrane of the mouth and tongue, but without seeing anything abnormal. I then took a steel point, with which I probed and percussed all my teeth in succession. Every one was sound excepting the last molar on the same side as the headache, and on the posterior aspect of this there was a point, tender on pressure, although no cavity could be found. I went to a dentist as soon as possible afterwards, and he informed me that caries was just beginning at the spot which I had thus discovered. Some time ago a clergyman of my own acquaintance began to suffer from headache so intense as completely to incapacitate him. After taking various medicines in vain, he went for a Continental

tour, but came back little benefited, and as soon as he resumed work the headache was as bad as ever. Shortly after his return I saw him, and remembering my own experience, I suspected his teeth. On looking into his mouth, however, I could see nothing; all his teeth seemed to be perfect. I then took a steel bodkin and probed and percussed each tooth in succession. At last I came to one which was tender. I advised him to see a dentist about it. This he accordingly did, and the tooth was found to be carious. It was at once properly stopped and the headaches disappeared. So frequently are headaches dependent upon decayed teeth, that in all cases of headache the first thing I do is carefully to examine the teeth. Not unfrequently when I have pointed to a decayed molar as the origin of the headache, the patient has said, "But I have no pain in the tooth;" and to this I usually answer, "It is quite natural. You get the toothache in another part of your head."

The question now arises, what is the cause of the pain felt in some other part of the head instead of the seat of irritation, but originating in some local irritation like that of a decayed tooth? Is it only due to changes in the centre for sensation in the brain, or to alterations in the periphery, or to both? I am inclined to believe that while it may sometimes be due to changes in the centre for sensation in the brain only, as in the case of hysterical pains, yet sometimes functional peripheral changes either accompany these central changes, or may of themselves give rise to the pain. In this latter case the peripheral alterations are probably produced through the medium of the sympathetic system.

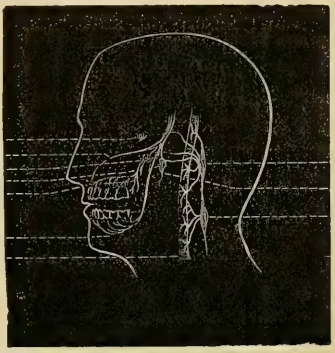


Fig. 1.—A very diagramatic representation of the connection between the branches of the fifth nerve and the sympathetic system, intended to indicate the nervous channels through which irritation of the fifth nerve may affect the vessels of the head.

Thus I have noticed that the scalp over the place where the pain is felt in headache depending on a decayed tooth becomes tender

on pressure while the pain lasts. This tenderness, however, is very transitory, and I have sometimes felt the headache and accompanying tenderness disappear from one part of the head and appear in another with great rapidity. The disappearance of the tenderness along with, or very shortly after, that of the pain, showed that there could be no structural alteration of any importance in the tender part. There may, however, be very important functional changes in blood-vessels of the painful part, and I think that headache is very frequently due to those changes; that, in fact, what we may regard as a kind of colic in the vessels occurs in the part, and this gives rise to the actual pain. The mechanism of the headache here is that the irritation in a tooth, for example, acting through the vaso-motor nerves, causes vascular spasm, and this vascular spasm causes the pain of headache.

In cases of headache and toothache combined, the headache may be simply due to changes in the centre for sensation in the brain, or these may be accompanied with spasm in the vessels of the head.

In cases of headache depending upon a decayed tooth, where no toothache is felt, it is not improbable that the irritation in the tooth does not give rise directly to the sensation of pain in the head, but does so by acting through the sympathetic system on the vessels so as to cause the spasm which leads to the sensation of pain. If this be so, we ought to be able to alleviate headache, not only by treating the tooth which is the original source of the evil, but also by such measures as will relieve the spasm of the vessels themselves, and this, I think, is shown to be the case in practice.

A great deal of discussion has taken place regarding the condition of the vessels in megrim. Du Bois-Reymond, who suffered much from it himself, attributed the pain to spasmodic contraction of the vessels, for he found that while the pain lasted his temporal artery on the same side became tense and hard like a bit of whipcord, and the pupil of the corresponding eye dilated, as if the sympathetic in the neck had been irritated. Others again have held, also on the ground of personal experience, that the arteries, instead of being contracted, were widely dilated. The reason of this discrepancy is simply, I think, that these observers have not examined the arteries throughout their length. In my own case I have sometimes found that during an attack of megrim the temporal artery on the affected side was hard like a bit of whipcord as described by Du Bois-Reymond, but that at other times, when no difference between the amount and kind of pain could be detected, it was widely dilated and pulsating violently. But on those occasions, if I traced it along its course,

I found that while the trunk of the artery was dilated at the temples, its smaller branches as they passed on to the forehead were hard and contracted, and felt almost like pieces of wire under the skin. The carotid artery was also widely dilated and pulsating violently, as well as the temporal. The condition here then was a disturbance in the proper relation of the calibre of differents parts of the same artery. The proximal end was abnormally dilated; the peripheral end was abnormally contracted. The same condition is present in those cases where the trunk of the temporal artery is contracted, for if the finger be carried backwards, the trunk of the carotid is felt to be dilated.

The only difference, then, between those cases of megrim in which the temporal artery is dilated and those in which it is felt to be contracted is a difference in the point of the artery at which the contraction takes place. The consequence of this disturbance in the relationship between different parts of the artery is that the blood, instead of being gradually regulated in its onward flow by the gentle action of a long artery, is suddenly checked by a local contraction, and the successive impulses produced by the jets of blood sent from the heart along the dilated arteries hammering upon this contracted point give rise to great pain. This pain can be at once relieved by compressing the carotid, so as to arrest the flow of blood through it; but unfortunately a feeling of undefinable distress is usually produced by this procedure, so that one can generally keep it up only for a few moments. It may sometimes be relieved for several minutes by gently pressing on the carotid, so as simply to diminish its flow without entirely arresting the circulation in it.

Heat and cold are two of the remedies used to lessen headache; sometimes one is useful, sometimes the other; and so far as I know, no explanation has hitherto been given of the reason why. I believe it is simply this: That when heat is applied over the contracted peripheral vessels, it tends to relax them, and thus restores the equilibrium between the different portions of the artery; when cold is applied over the dilated vessels, it causes them to contract, and thus restores the equilibrium between them and the contracted peripheral parts.

The effect of the local application of heat and cold over the course of an artery had been well shown by Professor Winternitz of Vienna. I have seen him place a sphygmograph on the radial artery, take a tracing and then apply cloths dipped in ice-cold water around the arm; the consequence was, that the tracing of the radial artery at once became very much smaller from the contraction of the brachial. On this account cold compresses to the neck are sometimes very useful in headache.

Sometimes warmth to the throat may relieve, but here the *modus operandi* is different; the effect of the warmth in all probability being exerted not directly upon the vessels themselves, but rather upon the sympathetic ganglia in the neck by which the calibre of the vessels is regulated. And here I may perhaps say a word regarding this nervous mechanism. The carotid artery and its branches derive their vaso-motor nerves from the superior cervical ganglion, and to disturbance of the functions of this ganglion are, I believe, due the headache caused by dental irritation. I do not know that Du Bois-Reymond's headaches depended upon a decayed tooth, but I should very strongly suspect it. In his case there was distinct evidence of sympathetic disturbance in the dilatation of the pupil of the affected side. In my own case I have never noticed any dilatation of the pupil, but I have observed a curious transference of pain from the temple to the occiput, and from the occiput to the temple again, so rapid that I think it can only be ascribed to a disturbance of the cervical ganglion. The explanation which I give of it is this: That the vaso-motor branches of the temporal are affected at one time, at another, those of the occipital artery, and the rapid change of the headache from one part to another is due to an alteration in the ganglion itself. The occurrence of occipital headache in place of temporal in my own case attracted my attention to decayed teeth as a cause of occipital headache, and I found that it is by no means unfrequent. The other day I saw a scientific man who was complaining much of occipital headache on the left side. I at once said to him "The second molar on the left side of your lower jaw is decayed." This statement was not quite correct, for the decayed tooth turned out to be the second molar on the left side of the upper jaw, but it was so near the truth that it astonished him greatly, because it had never occurred to him that there could be any connection between a pain at the back of his head which gave him great annoyance and a decayed tooth which was not troubling him in the least.

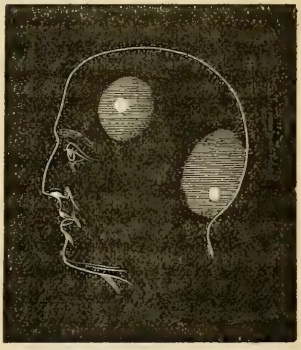


Fig. 2.—Diagram showing the seat of pain in megrim or occipital headache depending on decayed teeth or defects of the eyes. The shaded area shows the seat of the pain; the spot in each area indicates the seat of tenderness on pressure.

In regard to the situation of headache depending upon decayed teeth, I find that a decayed molar in the lower jaw usually gives a temporal or occipital headache, and a decayed molar in the upper jaw causes temporal headache which is rather farther forward than that

caused by the lower jaw. Decayed incisors or eye-teeth are more likely to cause frontal or vertical headache.

Another source of headache closely allied to the teeth is sore-throat. Enlarged and inflamed tonsils are apt to give rise to headache, which usually tends to run up in front of the ears and over the vertex. On one occasion I suffered from inflammation of this sort, and found that at first the pain was diffused all over the head, so that one could not localise it at one point more than another, but that as the inflammation went on the pain became more localised at the sides of the head and vertex, and gradually extended downwards and became more localised, until it was felt very distinctly in the throat, and hardly in the head at all.

Perhaps a still more frequent source of headache than even decayed teeth are abnormal conditions of the eyes. The headache which comes on after working with the microscope, or after straining the eyes in a picture gallery, is only too well known. It is usually frontal, often extending over the whole breadth of the forehead, but sometimes limited to the forehead above one orbit.

On one occasion I remember seeing a friend who had been working with a microscope, and was suffering from most intense headache. On entering the darkened room in which he was lying, I thought at first that his eyes were jaundiced, but closer examination showed that the apparent yellowness was due to great injection of the vessels of the sclerotic.

It would be going too far to say that frontal headache is always due to an abnormal condition of the eyes, but I believe it is so much more frequently that one would at all suspect. Even the frontal headache which occurs in derangement of the stomach and biliousness is, I think, very frequently connected with an abnormal condition of the eyes to which the indigestion gives rise, for if we press the finger upon the eyeballs during a bilious headache, we not unfrequently find that they are abnormally tense and the intraocular pressure high, so that the eyeball feels almost like a marble under the finger. Curiously enough, too, I have noticed that some persons who suffered from bilious headache in early life begin to suffer from giddiness whenever they become bilious as they grow older. This giddiness during a bilious condition began to come on just at the time when their sight began to alter and they commenced to wear spectacles. But frontal headache is not the only one which may arise from abnormal conditions of the eyes, for megrim or sick headache is very frequently associated with, and probably dependent on, inequality of the eyes, either in the way of astigmatism, myopia, or hypermetropia.

Formerly I used to suffer myself from megrim, which might affect either side of the head, but for some years past it has almost invariably affected the left side. My right eye is normal, but the left is hypermetropic, and probably the greater strain that is thrown upon this eye in reading leads to the headache on the same side.

The relationship between megrim and abnormalities of vision has been pointed out by several authors, amongst others Mr. John Tweedy, Dr. Savage, Mr. Higgins, Dr. Brailey, and Mr. Carter.

The good effects of spectacles in megrim was well illustrated in the case of one of my colleagues who suffered very frequently, but after getting a proper pair of spectacles did not get a headache half so often as before.

Although dental irritation and abnormalities of vision are probably the two most common and most important causes of headache, yet the nose and ear are also channels through which external irritation may operate in producing headache, and they must not be overlooked. As far as my experience goes, headache depending upon disease of the nose is at the top of the head, just behind the commencement of the hairy scalp, and headache here should always lead to an examination of the nose.

The frontal headache, however, which occurs in ordinary cold in the head, and which probably depends upon congestion of the mucous membrane lining the frontal sinuses, is known to every one; and Dr. Hack[1] of Freiburg has observed several cases both of megrim and of frontal headache depending upon congestion of the mucous membrane covering the inferior turbinated bones, and he has been able to effect a radical cure in several cases by the application of the galvano-cautery to the inflamed and swollen mucous membrane.

In the causation of headache, however, we have always to consider two things—the condition of the organism generally and the local source of irritation. We have hitherto directed our attention to the local sources of irritation, but local irritation alone will not cause headache. We find that numbers of people have decayed teeth, and yet they suffer neither from toothache nor headache, excepting perhaps occasionally. The source of irritation is constantly there, and yet the effect it produces appears to be only occasional. The occasional pain is the reaction of the organism to the irritant, and its intermittent occurrence is probably to a great extent due to the organism being only occasionally in such a condition as to give this reaction. We know that the pain of toothache, for example, is often at once remedied by a brisk purgative,

[1] Ueber eine operative Radical-Behandlung bestimmter Formen von Migräne, Asthma, Heufieber, u. s. w. Von Dr. Wilhelm Hack, Wiesbaden, Bergmann.

although the tooth remains in the same condition, the purgative having so altered the organism that it no longer responds in the same way to the irritation of the tooth. I use here the vague term *organism* in place of using the more definite one nervous system or cerebral centre of sensation, because we do not at present know the exact mechanism by means of which brisk purgatives produce such an effect. It is highly probable that they do so not directly but indirectly, by modifying the irritation or by clearing away poisonous substances from the intestine.

There are several conditions of the body which tend to give rise to headache more especially; these are indigestion, biliousness, constipation, fever, plethora, anæmia, and debility, rheumatism, gout, and albuminuria.

The headache of indigestion, biliousness, and constipation is generally frontal, but it does not always affect the same part of the forehead. As a rule, derived from an exceedingly large experience in the Casualty Department at St. Bartholomew's Hospital, where one sees cases not by tens, but by hundreds and thousands, I have found that frontal headache associated with constipation is removed



Fig. 3.—To show the position of the frontal headache which in cases of constipation is relieved by salines.



Fig. 4.—Showing the position of the frontal headaches relieved by acids and alkalies in the absence of constipation. The lower is relieved by acids, the upper by alkalies before meals. The lower one also indicates the occasional position of headache caused by straining the eyes.

by the Haustus Magnesiæ Sulphatis of the hospital pharmacopœia; that headache just above the eyebrows, and not accompanied by constipation, is relieved by Haustus Acidi Nitro-hydrochlorici; while headache, also unaccompanied by constipation but situated higher up on the forehead, just below or at the commencement of the hairy scalp, is relieved by alkalies, usually given in the form of Haustus Calumbæ Alkalinus twenty minutes before meals. Occi-

pital headache is also sometimes associated with indigestion, and is sometimes relieved also by Haustus Acidi Nitro-hydrochlorici, but in it careful attention should be paid to the condition of the teeth. The headache of fevers is usually frontal, and this is, I think, associated to a great extent with alteration in the vascularity and tension of the eye. When resident physician in the Infirmary at Edinburgh, I used to see a number of cases of typhus fever, and in this disease the injection of the eyes is well marked; and I was strongly reminded of the eyes of typhus patients by the appearance which, as I have already mentioned, I observed in my friend who was suffering from headache after working with a microscope. Both the injection of the eyes in typhus and headache in fevers generally, whether it be accompanied with injection of the eyes or not, probably depends upon the increased circulation caused by the greater heat of the body in the febrile condition, and by the presence of morbid products or poisons in the blood, which not only act upon the eyes, but upon the nervous system and the body generally.

Closely associated on the one hand with the headache of indigestion, and on the other hand with that of fever, is the headache of plethora, which is usually frontal or occipital, and depends both on the powerful circulation which is present in this condition and probably also on the products of tissue waste circulating in the blood.

The headache of anæmia and debility is usually vertical, and is usually associated with feelings of flushing, of heat, or sudden chilliness, and muscæ volitantes, and not unfrequently also with gastric derangement, evidenced by pain in the epigastrium shooting through between the blade-bones.



Fig. 5.—Diagram to show the position of the vertical headache of anæmia.

The rheumatic headache very frequently is felt over a considerable part of the head generally, and is associated with tenderness over a great part of the scalp. The tenderness is sometimes excessive. This headache is frequently relieved by the administration of iodide of potassium. A formula given me by Dr. Image of Bury St. Edmunds for this headache, and which is very useful, contains 5 grs. of iodide of potassium, a drachm of tincture of valerian, and a drachm of aromatic spirits of ammonia. But although the rheumatic headache assumes very frequently the form I have just described, it appears to me sometimes to show itself as a frontal or temporal headache, and

to be associated with a rheumatic affection of the muscles of the eyes. On one occasion I administered some salicylate of soda for the relief of pains in the limbs which were associated with severe headache. The effect of the salicylate in relieving the headache was almost magical, and I have accordingly tried it in a number of cases since. I found that 2½ grs. of the salicylate of soda, given either alone or with some aromatic spirits of ammonia, every half an hour while the headache lasts, will often after one or two doses cut short the headache, which would otherwise have continued for a whole day or more. I have been unable at present to distinguish a gouty headache *per se* from the headache of plethora or indigestion, and should suspect the gouty element only from the patient's family and personal history.

In albuminuria the headache may be frontal, or may be felt as a tight band surrounding the head.

In syphilis its situation may vary, and it is generally recognised by its history, by its being more or less constant, remitting instead of intermittent, and by its frequent association with persistent tenderness at a limited spot.

I may now, in conclusion, sum up shortly the main points I have endeavoured to bring forward in this paper.

Headache is usually the product of two factors—local irritation and general condition.

The chief local causes are decayed teeth and abnormalities of the eye, although disease of the ear and nose, inflammation of the throat, and local irritation of the pericranium or of the skull in rheumatism and syphilis, are not to be forgotten. Decayed teeth may give rise to temporal or occipital headache when the molars are affected, and also I think to frontal when the incisors are decayed.

The chief abnormal conditions of the eye which cause headache are strain from reading, or working with imperfect light, or for too long a time, myopia, hypermetropia, astigmatism, inequality of vision between the two eyes, and last, but not least, glaucoma.

Besides this, I think that alterations in the circulation and intraocular pressure are frequently produced by bile or poisonous substances circulating in the blood, and that probably also a rheumatic condition, affecting either the eye itself or the muscles which move it, is a not uncommon cause of headache. Where both eyes are equally affected, the headache is usually frontal; but when one eye is more affected than the other, the headache appears either in the form of brow ague or megrim.

In treating any case of headache, therefore, the first thing to do is to see whether the teeth are sound and the eyes normal. If anything is found wrong with either the teeth or the eyes, the defect should be at once corrected. The throat, ears, and nose

should also be examined to see if any source of irritation is present there, and the surface of the scalp tested by pressure for rheumatic or syphilitic inflammation. Percussion should also be tried over the head in order to determine whether or not there is any intracranial tumour.

The locality of headache is probably determined chiefly by the local source of irritation, but this differs according to the general condition in a way that it is at present impossible to explain. Thus frontal headache with constipation is usually relieved by purgatives; frontal headache without constipation, just above the eyebrows, is relieved by acids; and a similar headache, situated higher up at the commencement of the hairy scalp, is relieved by alkalies. Vertical headache is usually associated with anæmia, and is relieved by iron. The more or less continuous headache of syphilis is usually best relieved by iodide of potassium; but in order to gain relief the dose must sometimes be much larger than that usually given, and may range from 5 grs. up to 30 grs. for a dose. Smaller quantities of iodide of potassium are usually sufficient to cure the rheumatic headache.

ON A

CASE OF AMYOTROPHIC LATERAL SCLEROSIS,

WITH MICROSCOPICAL EXAMINATION OF THE NERVE CENTRES, &c.

BY

ROBERT J. COLLYNS.

The subject of this case was a man, aged 32, formerly a clerk in the Indian Civil Service. He was born in India, and lived there until four years ago, when he came to England.

He was married, but had no children. He had suffered from ague twice in India when aged 20 and 26, but, with this exception, he had always enjoyed good health until a few months before coming to England, when he developed signs of commencing phthisis. He left India partly on account of some family quarrel and because he thought his health would be benefited. For some months after his arrival in England, he travelled about in search of employment, but failing to obtain this, he returned to London without money, and for several months was an inmate of an infirmary. Afterwards he was an in-patient at Brompton and St. Thomas's Hospitals.

He had been in the habit of smoking very much since he was 19 years old; and he had also been accustomed to drink to excess, especially lately, since he had come into some money. He was admitted to Mark Ward on March 31, 1883. He gave the following account of his present illness:—

In September 1882, *i.e.*, seven months before admission, he noticed some loss of power in the left hand; this was most marked in the left fore-finger, which soon became so weak that he could not straighten it like the others. Very soon afterwards the right hand also became weak; and not only the hands but the arms also. During this month, too, he noticed that there was a "nasal twang" with his voice.

In October he noticed that both upper extremities, especially the hands and fore-arms, were considerably wasted. The lower extremities also were smaller.

In December, *i.e.*, four months before admission and from three to four months after the onset of the disease, he noticed that his legs "shook" when he walked, especially at the knees, and then his legs "got stiff in the bend of the knees when he tried to walk, and he dragged his toes along the ground in walking because his knees were stiff." At this time he found that he could not hold a cigar between his lips, and that he was unable to frown. He had experienced no numbness or formication in the limbs, and no stiffness other than that at the knees until just recently, when he sometimes experienced slight stiffness in the right elbow-joint in the morning. He had suffered no pain of any sort, but sometimes the left arm would "tremble" when he held it from the shoulder; and he said that there was "twitchings," fibrillary tremor, of his muscles every day.

In January some difficulty in deglutition supervened; both solid and liquid food, but especially the latter, were swallowed with difficulty. The patient said that food passed out of the mouth easily, but it seemed to "stick in the throat" and make him cough, and he was obliged to make two or three gulps to get it down. Since then the amount of dysphagia had varied so much that sometimes he could swallow nothing without difficulty, whilst at other times he could take solid and liquid food readily enough. About the same time some defect of speech was noticed by his friends; his voice became thick and husky. Soon afterwards (end of January); fits of laughing used to come on quite involuntarily. "Sometimes," said he, "I laugh when by myself, and I cannot help it." He noticed, too, that he spit much more than he used to, and that saliva ran from the right side of his mouth. Once or twice he had felt obliged to cry in the same way as he felt obliged to laugh.

Since January he had had three attacks of dyspnœa at night. He woke in the night and found great difficulty in breathing for five or ten minutes. He said he knew when the attacks were coming because he felt parched with thirst before he went to sleep. From this date he suffered very much from headache.

Two months before admission, whilst yawning, the lower jaw slipped out of place, and ever since he has been able to subluxate it and reduce the dislocation at his pleasure.

On admission the patient's condition was as follows:—

He was thin, pale, and badly nourished. He had lost three stone in weight since September. He could talk only slowly, and in a low, thick, monotonous nasal voice. He was perfectly rational, and

could understand all that was said; moreover he was very intelligent. There was general wasting of all the muscles of the face, which were constantly thrown into the position of laughing, much to the annoyance of the patient, for he could answer no question without smiling or assuming a ludicrous expression. Often after laughing in this way the mouth would remain half open, and saliva flowed out. The tongue could not be protruded to its full extent; it was remarkably wasted and wrinkled, so that it presented many furrows parallel to the central raphé. It was never observed to be stirred by vermicular movements. The soft palate was partially paralysed. On admission dysphagia was so serious that the patient could not swallow any food, and for one day it was necessary to feed him through the nose. This difficulty however soon diminished, and the man was able to take sufficient nourishment in the ordinary way, and he experienced difficulty only when he was in a strange place or was being looked at. On account of weakness of the muscles of mastication, however, he was unable to triturate any hard food, and preferred to have his meat cut up for him.

There was considerable wasting of all the muscles of the trunk; all seemed to be wasted to an equal degree. Respiratory movements were shallow and feeble; but both the diaphragm and intercostal muscles were at work.

All the muscles of the upper extremities were atrophied, the fore-arms were more wasted than the arms, and the right upper arm was smaller than the left. The circumference of the limbs at this time was as follows:—Arms (round the thickest part of the biceps), right $8\frac{1}{4}$ in., left $8\frac{1}{2}$ in.; fore-arms, right $8\frac{1}{4}$ in., left $8\frac{1}{4}$ in. The hands were very much wasted, the thenar and hypothenar eminences scarcely existed, and the outlines of all the bones were plainly felt. The loss of power in both arms was great, and the grip of the hands exceedingly weak. Paralysis of the left extensor indicis was so great that the fore-finger of this hand could not be extended, and was constantly semiflexed, though there was no spasm or contraction of the flexor. There was no rigidity of the shoulders, elbows, or wrists, but the hands were always pronated, and it required some force to supinate them.

The lower extremities were generally wasted, but not to so great an extent as the upper extremities. The patient affirmed that there was much more wasting of the arms than of the legs. The legs and feet were more wasted than the thighs; the right calf measured $10\frac{3}{4}$ inches, the left $10\frac{3}{8}$. The loss of power of these limbs was not quite so much as that of the arms. Patellar tendon reflex was greatly exaggerated in both legs, and ankle clonus was easily obtained. There was no rigidity as the patient

lay in bed, but as soon as he attempted to walk the knees became rigid, and were flexed so little that he dragged his toes along the ground, and could not walk without support on either side. His gait was such as is produced by paralysis with rigidity, and it did not become more unsteady in the dark or when his eyes were closed.

There was neither dysæsthesia or anæsthesia, nor was there any tendency to the formation of bed-sores, or any paralysis of the bladder or rectum.

Electrical reaction.—The wasted muscles certainly did not respond to the faradic current nearly as readily as healthy muscles should. To produce contraction of the muscles of the fore-arms it was necessary to employ a current half as strong again as was necessary to produce the same amount of contraction in corresponding healthy muscles. The muscles of the thenar eminences required even a considerably stronger current, and so did the extensor indicis of the left fore-arm. The muscles of the legs responded to weaker currents than did those of the arms, and the peronæi seemed to be less affected than the surrounding muscles. The muscles of the upper arms and thighs responded to weaker currents than did those of the fore-arms and legs. Galvanism gave similar results. The loss of electrical irritability, unlike the loss of power, was apparently not in excess of the amyotrophy.

There were no signs or symptoms of visceral or other disease beyond those described already.

The subsequent course of this disease may be divided into two periods: first that of temporary improvement, and second that of gradual retrogression. The first of these periods lasted for two months, during the whole of which time the patient steadily improved. He was kept in bed for the first three or four weeks, but by the end of that time he had improved so much that he preferred being up, and could walk four or five times up and down the ward with the help of a walking-stick only, and could even get upstairs by himself. He continued to improve in all respects up to the end of May. He gained 7 lbs. in weight, and the circumference of his limbs increased. The power in the arms and hands was regained to a considerable degree, but the greatest improvement took place in the lower extremities. Stiffness of the knees in walking remained as on admission, but the only other signs of rigidity were some resistance against abduction of the thighs and supination of the hands, and occasionally some little stiffness of the elbows. Patellar tendon reflex was always much exaggerated, but ankle clonus varied much; sometimes it was easily obtained in both legs; sometimes it was better marked in one than the other; and sometimes almost absent in one or both. His speech improved, and with the exception that he could

not masticate hard food, he only once or twice experienced any difficulty in deglutition. On the night of April 16th, he had an attack of dyspnœa, during which he had to be propped up in bed for a few minutes. The risus was still present, and was most frequent when the patient was in good spirits. Electrical irritability had improved *pari passu* with the increase of power. The temperature during all this time was normal, and the patient's general condition improved.

The period of retrogression commenced at the beginning of June. The patient became despondent, and it was evident that he was losing ground. Amyotrophy steadily increased and he lost flesh, so that in September he weighed 16 lbs. less than in May. The circumference of the limbs at the end of September was as follows: — Arms, right 7¼ in., left 7½ in.; fore-arms, right 7¼ in., left 7 in.; right calf 9¼ in., left 9¼ in. Paralysis likewise gradually increased; soon he could take only two or three steps by himself, and he could not stand upright on account of the weakness of the muscles of his back. The extensor muscles of the hand and fingers became so feeble that the wrists and fingers were constantly drooping, and the patient was unable to extend them; this was especially the case with the left extensor indicis and the right extensor minimi digiti. The muscles of the neck, too, became so feeble that the patient could not raise his head from the pillow or his chest, and could scarcely turn it from side to side. The retrogression advanced so rapidly in these respects, that by the end of June the man was scarcely able to get out of bed and was becoming very helpless. Loss of electrical irritability was proportionate to the amyotrophy, and the same result was obtained with both the faradic and galvanic currents. In addition to the signs of rigidity already noticed, the muscles of the calf became rigid, and the foot could be flexed only with considerable force. The patient complained of "tightness across the chest," and attacks of dyspnœa recurred more frequently. Dysphonia advanced to such an extent that for several weeks before death the patient could only make inarticulate noises and was understood with the greatest difficulty. Difficulty in swallowing also returned; the man often felt as if he would choke; sometimes food entered the larynx, and drink would return through the nose. Towards the end of September the dysphagia had become so serious that it was necessary to feed the patient by means of an œsophageal tube, and all food was given in this way for two or three weeks before death. Large quantities of viscid saliva were still secreted, and this collecting about the mouth and fauces and becoming inspissated, formed a fœtid coating on the mucous membrane which could be torn off in strips like false membrane. The

face assumed a lachrymose expression, and instead of laughing the patient would often cry when spoken to. Still he remained perfectly intelligent to the last.

On September 20th, the beginning of the end was heralded by shivering, followed by a rise of temperature to 103·4°. From this date the patient rapidly lost ground. The temperature never became steady, but ranged between 100° to 102°. Pain in the right side of his chest, shortness of breath, and a very distressing cough supervened, preventing sleep. These symptoms were due to hypostatic congestion and inflammation of the right lung; a condition attributed in part to the habitual decubitus of the patient on his right side. Soon the lung became so collapsed that the heart was displaced to the right of the sternum, and the embarrassment to respiration and circulation became so serious that the patient died on October 14th at 1.30 P.M.

Treatment.—As stated above, the patient was kept in bed for the first few weeks after admission, and from that time up to the beginning of June he spent most of the day out of doors, and he could walk in and out by himself. His diet was always liberal, and from the commencement of the retrogression period he took either brandy or wine as stimulants. From the time of admission up to the middle of June, he took strychnia in doses of from three to five minims of the liquor three times a day. Afterwards he took citrate of iron and quinine, mercury, cinchona, Easton's syrup, and belladonna in succession without deriving any benefit, and finally the strychnia was resumed. Sleeplessness towards the end of the disease was combated by small injections of morphia, but soon the state of the lung became too bad to allow of this. Electricity (galvanism chiefly) was employed during the earlier periods of the disease, but was discontinued when it became evident that the patient was getting worse. It may be worth while to mention that there was never any difficulty in feeding the patient by means of the tube passed into the stomach, but for the last few days before death the irritation thus produced was sufficient to provoke an action of the bowels within a few minutes of the administration of food.

Post-mortem examination.—General emaciation of body. Circumference of limbs:—Arms, right 6⅛ in.; left 6¼ in.; forearms 6 in. each; legs 8¼ in. each. The colour of the muscles was paler than natural, not yellowish, and they felt soft and flabby; all the voluntary muscles of the body seemed to be wasted, but in different degrees.

Thorax.—The apex of the right lung was adherent to the chest-wall and in the apices of both lungs were a few concretions (tubercular), but no active tuberculous disease. The whole of the

right lung was solidified and greatly collapsed, and sanguineous purulent fluid exuded from the greyish section. The heart was displaced to the right and was quite healthy.

Abdomen.—Nothing abnormal discovered.

Nerve-centres.—Nothing abnormal was discovered with the naked eye either in the brain or spinal cord, but the latter cut with more resistance than is natural. The cerebral and spinal meninges were perfectly healthy.

Microscopic examination.—I am indebted to Dr. Klein for help and advice in the preparation of the sections. The results were as follows: —

Muscles.—A microscopic examination of the more wasted muscles in the recent state, and a comparison with corresponding healthy muscles similarly treated, gave the following results:— Very many of the fibres had lost their transverse striation to a very remarkable degree; some were striated longitudinally, others appeared to be filled with a very finely granular material, whilst others looked like large hyaline casts. The size of many of the fibres was strikingly deficient; some were only one-half or even one-fourth the diameter of the fibres of corresponding healthy muscle, and yet some of these small fibres exhibited well-marked transverse striation. Lastly, there seemed to be a slight increase of connective tissue between the fibres. In other less atrophied muscles, the fibres presented similar but less advanced changes.

In the muscles of the tongue similar changes were observed, but here the increase of connective tissue was more abundant, and a considerable quantity of fat cells were present between the muscular bundles and fibres. The muscular tissue of the heart presented no morbid change.

Peripheral nerves.—No morbid change was observed, except that here and there the medullary sheath of certain fibres was lessened. They presented no marked atrophy or degeneration.

Spinal cord.—On examining microscopic sections, it was easy to discover regions affected by sclerosis, and atrophy and contraction of the anterior horns of grey matter without the aid of the microscope. The sclerosed areas were more translucent than the neighbouring white substance, and they were more deeply coloured by some of the stains employed. The sclerosis was most evident in the lateral columns (crossed pyramidal tract), but it was also observed in the anterior columns and direct pyramidal tract (fasciculi of Türck). In the lateral columns it extended throughout the whole length of the spinal cord, but it varied in extent in different regions. In the cervical enlargement the area of sclerosis was limited behind by the posterior horns of grey matter, and in front is reached as far as the outer angle of the anterior

horns; on the inner side it was limited by the grey matter, and on the outer side, the direct cerebellar fibres separated it from the surface of the cord. The anterior horns of grey matter were strikingly diminished in this region; they were little more than half the size of the corresponding region in a healthy cord.

In the dorsal region the area of sclerosis of the lateral columns was considerably smaller. It was limited behind and internally by the posterior horn, and in front it did not reach an imaginary line drawn along the posterior white commissure; on the outside, as in the cervical region, it was separated from the surface of the cord by the direct cerebellar tract. In this region, too, there was sclerosis of the anterior columns, and the anterior horns were very greatly diminished in size.

In the lumbar region the area of sclerosis was still more limited. Internally it was separated from the posterior horn by a tract of healthy tissue, except at the most posterior part, but externally it extended quite to the surface of the cord (the direct cerebellar tract does not extend to the lumbar region). The anterior horns were not quite so much diminished in size in this region as in the cervical and dorsal regions.

When examined under the microscope all these observations were confirmed, and the diseased areas were clearly defined. The line of demarcation between the sclerosed area in the lateral columns and the normal lamina of white matter on its outer side (cerebellar tract) was very conspicuous. In front the sclerosis gradually became less advanced as one approached the anterior columns; but these tracts were also invaded by the sclerotic change, and so was the direct pyramidal tract, but not to nearly so great an extent as the lateral columns (crossed pyramidal tract).

When the patches of sclerosis were more minutely examined, the lesion was found to consist in an enormous increase in the amount of neuroglia and atrophy of the great majority of nerve fibres. The fibres were separated from one another by a much greater proportion of neuroglia than is natural, and the interval between them was widened at the expense of the medullated sheath. The neuroglia presented a finely granular appearance, which was due to the cross section of minute fibrils, and there was a great increase in the number of connective-tissue corpuscles (cells of Deiter's). Here and there a new fibre presenting a normal appearance, both as regards the axis-cylinder and medullary sheath, was found; but in the great majority both the axis-cylinder and medullary sheath were greatly reduced in size, and in some little but the axis-cylinder itself was left. In those regions in which the sclerosis was less marked, changes of a similar nature, but less advanced, were observed.

In the anterior grey horns there was, besides the sclerotic changes in the neuroglia, a very conspicuous absence of ganglion cells, and a remarkable atrophy of most of those that remained. This lesion was especially pronounced in the cervical and dorsal regions, and in the latter region the cells of the posterior vesicular columns (Clarke's columns) had not escaped altogether, although they had received comparative immunity. In any section through the cervical and dorsal regions, only one, two, or three cells of normal dimensions were found in the whole of each anterior horn. A few contracted and withered cells were present, whilst others appeared as small granular masses, and the places where others had previously existed were marked only by empty pericellular lymph spaces. The processes of these ganglion cells participated in the shrinking and atrophy. In the lumbar region, more cells in the anterior horns presented a more or less normal appearance, but here also the majority were degenerated in various degrees.

The central canal was filled throughout the cord by small cells, but this condition is often found in sections of a normal cord.

The posterior horns of grey matter and regions of white substance, other than those mentioned above, presented no abnormal appearances.

Medulla oblongata.—In the upper part of the cervical region the area occupied by sclerosis was smaller than in the middle of the cervical enlargement; but as one traced the fibres which form the lateral columns of the cord upwards to the medulla, it was found that the region occupied by them, both at the decussation of the pyramids and in the anterior pyramids of the medulla, was gravely affected by sclerosis, and was much denser than is natural. There was the same increase of neuroglia and atrophy of nerve fibres as was present in the lateral columns of the cord. Just below the decussation of the pyramids the direct pyramidal tract was perfectly normal. The anterior pyramids were affected throughout their whole length.

The nuclei of origin of the motor cerebral nerves in the floor of the fourth ventricle were deficient. Thus instead of a large group of multipolar cells conspicuous for their size, which forms the healthy nucleus of the hypoglossal nerve, only a few small withered cells, almost devoid of processes, were found. The olivary bodies and other parts of the medulla were normal.

Pons Varolii and crura cerebri.—The regions occupied by the continuation of the anterior pyramids in the pons were also affected and appeared denser than they should be, but the disease could not be traced beyond this, and the crura cerebri presented a normal structure.

Remarks.—This case should be regarded, I think, as an example of the disease named by Charcot "amyotrophic lateral sclerosis," which consists of a collection of symptoms dependent on a lesion of the lateral columns of the cord together with a lesion of the anterior grey horns and the grey matter of the medulla oblongata.

There are, however, some points in which this case differs from the type of the disease as described by Charcot.

In the first place, the symptoms dependent on the lesion of the anterior horns of grey matter, viz., paralysis with amyotrophy and loss of electrical irritability, were predominant, whilst the symptoms of lateral sclerosis were singularly deficient when we consider how seriously altered were the antero-lateral columns of the spinal cord. In the cases narrated by Charcot, on the contrary, the symptoms of lateral sclerosis, rigidity, tremors, &c., were mostly well marked, and persisted until the amyotrophy became excessive.

Secondly, in speaking of this disease Charcot says, "The paresis which appears at the beginning, and the permanent contractures which after a brief delay succeed it, are unquestionably dependent on the symmetrical and lateral sclerosis."[1] Now in this case, judging from the order of the onset of symptoms, and supposing the patient's history to be reliable, it appears that the primary lesion was not in the lateral columns, but in the grey matter of the spinal cord and medulla. For the first symptoms were loss of power in the hands and arms, very soon followed by muscular atrophy without rigidity; and in the lower extremities, too, muscular wasting had been observed before the tremor and stiffness appeared. In Charcot's cases, on the other hand, it was the rule for paralysis with rigidity to precede amyotrophy, and in the lower extremities muscular wasting was often a long-delayed phenomenon after the symptoms of lateral sclerosis had been established.

The early onset of symptoms of bulbar paralysis accords with Charcot's description, but it seems to me to lend further evidence in favour of the theory that the primary lesion may be in the grey matter, and that the disease of the pyramidal tract is secondary. In this case nasal voice was one of the earliest symptoms, and the patient's friends tell me that difficulty in swallowing was noticed by them very soon after he began to ail; at any rate, the symptoms of labio-glossol-laryngeal paralysis were well developed within a few months of the onset of the disease.

I have nothing to add to the morbid anatomy so distinctly described by Charcot and other writers, but I have verified it in almost every detail. From the fact that in the upper part of the cervical region the direct pyramidal tract was found quite normal, whereas the crossed pyramidal tract was so seriously involved, it

[1] On Diseases of the Nervous System. New Sydenham Society, 1881.

would appear that the disease does not begin in the brain above the junction of those tracts and spread downwards, for in that case both tracts would be involved, as is the case in descending sclerosis consecutive to cerebral hemiplegia, but rather that the disease begins in the cord, either spreading from the lateral columns to the grey matter or *vice versa.*

Sclerosis of the anterior columns is probably propagated by changes in the grey matter of the anterior horns, and it is well known that descending lesions of the spinal cord occupy both the direct and crossed pyramidal tracts, so that the lesion of the former in this case may be thereby explained.

No definite change in the peripheral nerves was discovered; indeed they differed from normal specimens scarcely at all; but I suppose that an irritative influence can be conducted along the nerve fibres to the muscles and cause atrophic changes in their substance without affecting appreciably the nerve fibres themselves.

In conclusion, I repeat that I look upon this case as one in which the primary lesion was situated in the grey matter of the medulla and throughout the anterior horns of the spinal cord, and that disease was propagated from this focus to the anterior and lateral columns; in the former case perhaps by direct contiguity, and in the latter by means of the fibres which normally establish a communication between the lateral columns and the anterior cornua. For such cases as this I would propose the term *Amyotrophic lateral sclerosis,* meaning thereby that amyotrophy was the first and most prominent symptom; and for cases in which the disease begins in the lateral columns I would reserve the name *Lateral amyotrophic sclerosis.*

PROCEEDINGS

OF

THE ABERNETHIAN SOCIETY

DURING THE WINTER SESSION 1882–83.

October 5.

First general meeting.

Election of members.

Mr. T. G. Davy showed a case of hydatid of the liver.

Dr. Norman Moore, as secretary to the London Memorial Committee, presented to the Society an autotype copy of a memorial brass tablet erected in the church of St. Bartholomew the Less to the memory of Arthur Jermyn Landon, a former student of the Hospital, who died from wounds received at the battle of Majuba Hill, August 3, 1881.

Dr. Lauder Brunton, F.R.S., gave the opening address, choosing as his subject the life of Mr. Darwin.

He referred to Darwin's early life as a student of medicine, abandoning, however, before long the idea of entering the medical profession and his subsequent short career at Cambridge, where he took his degree. Here Darwin first acquired a knowledge of botany. The speaker then traced his history from his appointment as naturalist on the 'Beagle' to the publication of his 'Origin of Species' and 'Descent of Man.' Dr. Brunton then showed how the theory of evolution serves to explain changes undergone during embryonic development or arrests of development occasionally found during adult life, and thence proceeded to show how the principle of the survival of the fittest was of special application to the career of a medical man, from the time of student life to subsequent professional practice.

Dr. Brunton's address is printed *in extenso* for circulation among members of the Society.

October 12.

Election of members.

Mr. Gell showed a case of unilateral atrophy of the face in a girl, aged 12. The case is fully reported in the St. Bartholomew's Hospital Reports of last year.

Mr. S. Paget showed a case in which there was enormous distension of the superficial abdominal veins following obliteration by thrombosis of the inferior vena cava.

Mr. Lockwood read a paper entitled 'A Necessary Reform in Out-patient Practice.' It was pointed out that in the year 1881 the number of outdoor patients who attended at St. Bartholomew's was 165,578. It was estimated that 46,862 of this total were surgical. A great many of these surgical cases were women and children, but the male surgical out-patients were estimated at 26,000. The employments and pecuniary position of these male patients were next discussed, and afterwards their ailments. The assertion of Messrs Hill and Cooper that 43 per cent. of the whole number of patients treated at Guy's Hospital suffered from venereal diseases was referred to (quoting from the report of the Harveian Society). The same authors point out that at the Hospital for Diseases of the Skin 10 per cent. of the patients suffer from similar diseases, and at Moorfields Eye Hospital 20 per cent. The surgery-book at St. Bartholomew's Hospital was examined, and only the most indubitable cases taken. Six days were taken at random during the months of June, July, August, and September 1882, and it was found that one patient in three was suffering from recent venereal disease. Reasons were then given to show that a special department ought to be devoted to these cases. It was next suggested that their treatment should not be gratuitous. It was stated that at the Lock Hospital in the year 1881, 11,625 male patients were treated, and that they paid £870, 1s. 1d. These patients do not appear to differ from ordinary out-patients as seen elsewhere. All except the most indigent are expected to pay 1s. The system worked excellently. The fact that they were expected to pay seemed to increase their respect, not only for themselves, but for the assistance given them. Lastly, the question was discussed as to whether an endowed hospital had any right to make patients pay for their relief.

October 19.

Election of members.

Mr. Square showed a case of arrested arrival of puberty in a male aged 29. The genital organs were very small, though

both testes had descended; there was no pubic hair, the voice was womanish, and there was imperfect sexual power.

Mr. Berry related a case of injury to head, followed by hæmorrhage and marked contraction of one pupil with simultaneous marked dilatation of the other.

Mr. Davy read a paper 'On Sociology and Disease.' He sketched the history of the recognition and treatment of disease from the time when the savage recognised disease as a supernatural entity only to be combated by exorcism and witchcraft. The next advance was visible in the case of the Semitic races, who elaborated a complete hygienic system as to the disposal of refuse, isolation of infectious cases, &c. Mr. Davy then spoke of the establishment of quarantine regulations at Venice in the twelfth century, and in the latter part of the paper spoke at length on the subject of cretinism, showing by cases quoted that the development of cretinism among a community was due to the nature of the drinking-water.

October 26.

Election of members.

Mr. Rayner showed a case of melanotic sarcoma of the phalanx in a woman, aged 53.

Mr. Ernest Clarke showed a case of ununited fracture of the humerus and formation of a false joint of unusually perfect character.

Mr. Habershon read his paper on 'Theories of Vision.'

He remarked upon the intimate connection of the physiology of vision with a true apprehension of the physical laws of light; in fact, that no satisfactory view was propounded until, by the increase of our knowledge of anatomy and the discovery of the nature and mode of transmission of light, a secure basis was established on which to build.

He illustrated this by a brief historical account of the gradual evolution of the present theories. The crude ideas propounded by the atomists, among whom Democritus in 460 B.C. was conspicuous, and the views of Aristotle (with some glimmer of truth) were both equally confounded by their ignorance of anatomy. The discoveries of Newton, with his famous *emission theory* of light, were foreshadowed by two earlier observers, Cartesius and Goethe.

Newton's emission theory was again superseded by the *undulatory theory* of light of Huyghens, proved finally by the experiments of Thomas Young on interference phenomena in 1802.

Newton and Brewster's views on the perception of colour, which attempted to give a purely physical explanation, were referred to.

Leaving the physical side of his subject, the author remarked that the theory of the perception of light and colour at present best known and most generally adopted was the one based on the views of Thomas Young, and rescued from obscurity by Helmholtz some forty years later. This, which now goes by the name of the *Young-Helmholtz* theory, asserted that there existed in the retina three kinds of nerve-fibres, stimulation of which produced three primary colour sensations, *red, green*, and *violet*. The red perceptive fibres were most strongly excited by light of the greatest wave-length, and the violet by light of the smallest wave-length.

Compound colours would be decomposed by these fibres into their components, just as a musical sound by resonators.

The anatomical grounds for the acceptance of this view were discussed at some length.

There were certain optical phenomena the explanation of which must be undertaken by any theory that would hold its own.

Foremost among these was the abnormality of some eyes, known as *Daltonism*, or colour-blindness. By this defect of vision was meant the inability to distinguish certain colours. Helmholtz supposed that one or more of the three fundamental sensations is wanting, so that one of the primitive colours is absent. The whole chromatic system would evidently be upset, and would be different according to the absence of one or other of the three colours. Three classes of blindness have therefore been distinguished—red, green, and violet blindness.

The production of colour blindness by certain hereditary diseases of the optic nerve, also in cases of cerebral disturbances from injury, was mentioned; and finally, the action of certain poisons in causing the condition—tobacco, alcohol, and santonin. With regard to this last drug, the author described some experiments upon himself. When five to ten grains of santonin were taken before a meal, in a quarter to half an hour slight violet vision was produced. The violet glow speedily passed off and gave way to yellow vision. This was explained by Hüffner on Helmholtz's theory by supposing the elements sensitive to violet to be first excited and subsequently exhausted. The preliminary stage of irritation caused the violet effect, and the exhaustion led to the predominance of the red and green sensations giving a resultant yellow.

The application of the theory to certain subjective phenomena

was next given in detail. Amongst others, after images, contrasted colours, simultaneous contrast, irradiation, and successive contrast.

To account for some of these phenomena which Helmholtz fails to explain satisfactorily, Professor Hering has propounded a new explanation of the physiology of vision, not altogether an opposing theory so much as an extension and improvement of the former. Hering's theory reduced the process to a physiological rather than a physical one. He considered that vision was produced by the alternate destruction and repair of some visual substance. He believed in three pairs of sensations, each caused by a distinct kind of chemical change. His six fundamental sensations arranged in three pairs are: black—white, blue—yellow, green—red.

Hering's theory was chiefly founded on the subjective phenomena above described, and attempted to give a physiological explanation rather than to invoke the aid of mental judgment.

Hering explained most satisfactorily the phenomena of the inner light of the eye, the halos seen round negative after-images, simultaneous contrast, and others. No crucial experiment, however, was known which could decide between these two rival theories.

November 2.

Election of a member.

Mr. Ernest Clarke showed a case of intussusception in a child aged four months. The intussuscepted portion had sloughed away and had been passed per anum; the upper and lower portions to which it had been attached having subsequently united. The child died later from a different cause.

Mr. Bruce Clarke opened the surgical discussion on 'Intestinal Obstruction.'

November 9.

Election of a member.

Mr. Oscar Clarke read a paper on 'Some Forms of Puerperal Fever.' The various forms of the disease he classified under the following heads, viz., (i.) Erysipelatous or diffuse inflammations; (ii.) Pyæmic; (iii.) Local peritonitis, pelvic cellulitis, metritis, &c.; (iv.) Specific diseases, modified by the puerperal condition; (v.) The adynamic or typhoid. He spoke at length on the treatment of the disease by generous diet, free administration of stimulants, and large doses of quinine for pyrexia.

Mr. Mason, who also spoke, asserted that puerperal women are not more prone to the infection of scarlet fever and of other zymotic diseases than are other women.

November 16.

Election of members.

Mr. Berry showed a case of acute abscess of the ankle-joint in an infant, followed by perfect recovery after free drainage of the joint.

Mr. Montagu Smith read a paper on 'Hydrophobia.'

He commenced his paper by referring to the general ignorance of the ætiology of disease. Upon few subjects was our ignorance more apparent or more lamentable. The history of this affection was one of the most interesting in the annals of medical literature. Hydrophobia or rabies has been recognised from the remotest periods of antiquity. Plutarch has asserted that it was known in the days of the Asclepiadæ; the traditions of Egyptian archæology have assigned to it an antiquity remoter still; while from Greece comes the well-known story of the crime and punishment of Actæon. Homer, who wrote about 900 B.C., appears to have been acquainted with the disease. The suspected word is λύσσα, applied by Teucer to Hector, and commonly translated 'madness' or 'mad dog.' Later, the Greeks used this term, λύσσα, to signify rabies; and its manifestation in the human subject they called ὑδροφοβία. Among physicians, Hippocrates is supposed to refer to hydrophobia or rabies in the following sentence, 'Phrenetici parum bibunt, ex levibus strepitibus facile irritantur, tremuli sunt, aut convulsionibus tentantur.' Aristotle, too, in his 'History of Animals' mentions the disease; and Democritus, four hundred years before our era, is said to have localised it in the nervous system. Both Galen and Avicenna described it accurately. From Virgil and Ovid there is an unbroken chain of reference down to the present day. The earliest mention of the disease in this country occurs in the laws of Howell the Good, of Wales, about 1066; and the first English work on the subject was published by Spackmann in 1613, and entitled, 'A Declaration of such Grievous Accidents as commonly follow ye Bitings of Mad Dogges.' But it was not till 1872, when Fleming published his great work on 'Rabies and Hydrophobia,' that the subject was treated in its entirety and scientifically described.

The author then proceeded to speak of the conditions which favoured the production of the disease in the human species. He mentioned the stimulus of fear and of any sudden emotion or illness, and alluded to the interesting fact that a person has been known to acquire small-pox during the incubative period of hydrophobia who subsequently developed the latter disease. As to the manner in which rabies originates in the lower animals, nothing

whatever is known. Some authors imagine that it is always spontaneously generated, and many causes have been assigned for its appearance, such as excessive heat, want of water, unsatisfied sexual desire, &c., but all without the least foundation. Others, again, imagine that it spreads only by inoculation; but be the primary cause of the disease what it may, all are agreed that it is then propagated by contagion.

Mr. Montagu Smith then commented upon the geographical distribution of the disease. All countries are liable to it, arctic equally with tropical, though Australia, New Zealand, the Azores, and St. Helena are said to have hitherto escaped. European countries are especially affected, and among them chiefly England and Austria. The cause of this in Western countries is said to be the higher civilisation of dogs and the more complex habits of life which such civilisation entails. Fortunately for ourselves, however, the disease is still excessively rare, five deaths annually being rather over than under the average number; and, according to Halford Vaughan, out of thirty persons bitten by a rabid dog, not more than one becomes hydrophobic. But *during an epidemic* the average mortality is much higher, and is computed to vary from 10 to 50 per cent. of the persons bitten, three-fourths of the deaths being, as a rule, males. Thus, in England, out of 133 deaths from rabies during the years 1847–1858, 103 were males and 30 females.

Reference was then made to the accounts by old authors of a singular disease called 'lycanthropy,' in which men took on the nature and aspect of wolves. Artuis and Paulus Agineta, both writers of authority, described it. Donatus ab Altomari gives a horrid case; and Fincelius mentions one occurring as late as 1541, the subject of which was captured, 'still insisting that he was a wolf, only that the hair of his hide was turned in.' 'Versipelles' was the Latin name for these people. More singular, or at least more rare, is the account given by Andreas Baccius of a man 'who was struck in the hand by a cock with his beak, and who died on the third day thereafter, looking for all the world *like a fighting-cock*, to the great horror of the spectators.'

'Rabies in the lower animals and hydrophobia in man show many points of similarity and some few of contrast. The *incubative period* in man has been differently estimated; the majority of instances certainly prove that it is from one to three months, and shorter in young than in old persons. But it is impossible to doubt that in some cases this period is exceeded. Thus, in the *Lancet* for November 1877, Sir William Gull relates a case in which the poison took effect after a latency of thirteen years! The disease is also said to have manifested itself in less than a fortnight. The

question here arises, what becomes of the poison during this interval? Is it absorbed at once into the system, or does it remain latent in the scar of the wound, which thus acts as a matrix for its development? The action of other poisons, such as that of syphilis, points to the latter view as the more correct. Virchow believes that the contagium of rabies depends on the action of a ferment; and Fleming, following up this idea, thinks that there may be a double zymosis, first in the part affected and afterwards in the system. The incubative period in dogs varies in the same way as in man, its usual duration being from thirty to thirty-five days. La Fosse has stated a case in which it was only seven days, and Bouley one in which the poison remained latent for eight months. During the whole of this period there is not the slighest evidence of infection; the wound has quickly healed, and the patient, human or canine, has probably forgotten all about it.'

The author then described the symptoms of the stage of *invasion*, as given in the report of the sub-committee on hydrophobia in 1877. He drew attention to the fact that the term 'hydrophobia' was in most cases a misnomer, and said that it was not the dread of water *as water*, but the sense of extreme thirst with the consciousness of being totally unable to gratify it owing to spasm of the pharynx, that caused such a horror of liquids.

The symptoms of rabies in dogs, though agreeing with those of hydrophobia in man in their fatal issue and in many constitutional aspects, are said to differ from the latter in the following important particulars:—

1. The mad dog has no dread of water, but, on the contrary, will lap it with avidity; and though often unable to swallow, this is owing to paralysis of the lower jaw, and not to spasm of the pharyngeal muscles.

2. The mad dog shows, as a common symptom, a degraded appetite, the animal eating eagerly bits of wood, stones, or straw, and even its own excrement.

3. There is no cutaneous hyperæsthesia.

4. The mad dog dies from asthenia and starvation, consequent upon progressive paralysis.

To these points of difference between the two diseases it was objected—

1. That true 'hydrophobia' in the human subject is no constant symptom, and that the fact of water not causing spasm of the pharyngeal muscles is not proved, because, on the assumption of paralysis of the lower jaw, it is also assumed that the dog is not able to bring water into contact with the pharynx.

2. That in one case it is reported that the hydrophobic

individual, after having vomited a greenish bilious-looking fluid, was very desirous of drinking it.

3. That cutaneous hyperæsthesia in the human subject is no constant symptom, and that dogs equally with men suffer from hallucinations.

4. That paralysis is often the cause of death in man, either through the heart or glottis; and that any other differences may be almost all explained by the higher development of the nervous system in man. Mr. Montagu Smith then entered upon the question of the *pathology* of hydrophobia. While acknowledging our ignorance upon this subject, he asserted that the morbid process was now known beyond doubt to depend on structural lesions situated chiefly in the spinal cord and medulla oblongata, the symptoms of which were due to reflex action through the afferent nerves and motor transference in the higher nerve-centres. He drew attention to a series of microscopic specimens from the cerebro-spinal centres of two fatal cases of hydrophobia, exhibited at a meeting of the Pathological Society, January 7, 1872, by Dr. Clifford Albutt, which showed—

1. Great vascular congestion, and exudation of leucocytes into the surrounding structure, especially in the neighbourhood of the nerve-nuclei in the floor of the fourth ventricle.

2. Hæmorrhages.

3. Small gaps, caused by the disappearance of individual nerve-strands.

The parts appeared to be affected in the following order as regards severity: (*α.*) Medulla. (*β.*) Spinal cord. (*γ.*) Cerebral convolutions. (*δ.*) Central ganglia. This was in accordance with the symptoms present during life in either case, viz.:—

1. Reflex irritability in the region of the medulla, with no tetanic spasms.

2. Increasing irritability throughout the cord, with semi-tetanus.

3. Delirium.

The remainder of the paper was devoted to the *treatment.* Ten cases at least of undeniable cure had been reported during the present century, and an eleventh had lately occurred under the care of Dr. Lauder Brunton, for the truth of which he could absolutely vouch. Of the ten reported cures, three took place under profuse mercurial salivation; two under curara; one under iodine; one under constitutional treatment; one under Indian-hemp, morphia, and chloroform; one with cauterisation of the sublingual glands; and one with cauterisation of the scar of the wound on the appearance of the symptoms. Dr. Brunton's patient was treated with bromide of potash and quinine in large doses. Mr. Montagu Smith then briefly reviewed the history of

the treatment of hydrophobia in past ages. Treatment at the present day was divided into three heads, *preventive, preservation*, and *palliative or curative*. Under the second head, the appearance of vesicles or lyssæ under the tongues of infected persons from the second to the twenty-eighth day, which had been described by Russian physicians at the beginning of the century, was commented upon, and dismissed as hitherto unverified. Under the head of *curative* treatment it was urged 'that a definite mode of treatment should be adopted *from the first*, and persisted in throughout. But some one may say, "Would you treat every one that had been bitten by a mad dog as potentially hydrophobic?" I answer, "Why not?" Surely the fearful character of this disease and its almost universally fatal issue are sufficient to justify prophylactic treatment in every case.' The method advocated was mercurial salivation and a course of steam-baths, to be commenced *ab initio*. Iodide of potash might also be given, and scrapings from the granulating wound taken for microscopical examination. If, notwithstanding, specific symptoms set in, one of two courses should be adopted, and one only: the injection of curara in gradually increasing doses, or the administration of the various nervous sedatives, such as opium, chloral, and atropia. It was unwise to combine two such potent drugs as curara and morphia. With a few closing and hopeful remarks the paper was concluded.

November 23.

Mr. Colville showed a case of choreiform movements occurring in a stump after amputation.

Dr. West gave a short demonstration on the bacilli of tuberculosis, explaining the method of preparing and staining them as microscopical objects, and showing several specimens.

Mr. Howe read a paper on 'Nerve-Stretching.' He remarked that the first operation of the kind performed was by Nussbaum in 1872. He gave details of 72 cases that he had collected notes upon, out of these 72 there being 25 recoveries, this including 16 cases of tetanus with 7 recoveries. Out of 152 recorded cases there were 75 cures, 36 improvements; in 8 the result was not known, 10 cases were not improved, and there were 23 deaths. In his opinion the operation was on the whole favourable, particularly in certain classes of cases, *e.g.*, facial spasm, epileptiform neuralgia, neuralgia from scar pressure, &c., and possibly also in sciatica and locomotor ataxia. For the treatment of tetanus he maintained that the results of nerve-stretching were as good as that due to any other method of treatment yet discovered.

Two cases then present in Mr. Langton's ward were alluded to, one of spastic paraplegia, the other of tremblings of the legs, in each of which cases there was some improvement following the operation.

November 30.

Election of a member.

Mr. Howe showed a case of ectopion vesicæ in a boy aged 8.

Mr. Waller showed a case of congenital disease of the heart. Post-mortem it was found that the heart possessed only one auricle, that the aorta communicated with both ventricles, and that there was constriction of the pulmonary artery.

Mr. Bateman also showed a case of congenital malformation of the heart.

Mr. Womack then read a paper on 'Ferrier's Centres.'

In the opening of the paper he first reviewed the functions of the separate portions of the central nervous system, arriving at those of the cerebrum by a process of exclusion. The minute structure of the cerebral hemispheres was then described, after which a summary of the experiments and conclusions of Flourens, Bouilland, Longet, Vulpian, Goltz, and others was given. The speaker then contrasted the methods of investigation of Fritsch and Hitzig with those of Ferrier. A description of experiments by Dupuy and Carville et Duret was then given, showing that the movements following electrical stimulation were probably due to the escape of the current to the deeper cerebral centres.

Ferrier's assertion that the true respiratory centre is in the cortex cerebri, and that that in the medulla is merely a co-ordinating centre, was then dealt with; and after a short description of Ferrier's results had been given, reference was made to the explanations of Nothnagel, Hitzig and Fritsch, and Schiff, of the temporary localised paralysis following localised lesion of the cerebral cortex, viz., that the effects were due to an irritative inhibition of the lower reflex centres.

Finally, a summary of Goltz's experiments was given, showing the absence of any localisation of function of the cerebral cortex, together with experiments on monkeys done by Ferrier that pointed in the same direction, and in conclusion the speaker cited pathological evidence in controversion of the conclusions of Ferrier.

December 7.

House Physicians' Evening.

The subject chosen for discussion was rheumatic fever.

Mr. Bullar gave details of 20 cases treated in the hospital, 17 being cases of rheumatic fever, and 3 of gonorrhœal rheumatism. The treatment of these cases was discussed, the speaker point-

ing out that in some of the cases where salicin had been administered there had been a relapse; the cases, however, getting well when salicylate of soda was resorted to.

Mr. Gresswell referred at first to the disease peliosis rheumatica, or rheumatic purpura, discussing its relation to erythema nodosum. Out of 21 cases he had had in the wards, in 15 the knees or ankles were the joints first affected, and in one case all the joints were attacked. He advocated the employment of opium, of bathing if the temperature should be above 104° F., and the administration of stimulants if necessary.

Mr. Jenkins remarked that out of 59 cases of rheumatic fever coming under his care, 34 were females and 25 males; the ages of the greater number ranging from 10 to 28. The majority of the cases in females were domestic servants, but in one case a patient had had six attacks of rheumatic fever, one attack after each confinement. The only drug used in the treatment was salicylate of sodium, in doses, if the patient was strong, of 30 grains, reducing the dose gradually, the patient being kept under the drug for fourteen days.

Mr. Oswald Browne said that out of 30 cases he had had, 20 were first attacks; only two out of the 20 recovering without temporary or permanent heart complication. In one case hemichorea occurred after the patient had left the hospital; while in another, intercostal neuralgia was associated with rheumatic fever, both disappearing under salicylate treatment. A third case developed psoriasis guttata, and a fourth severe chorea, there being also rheumatic affection of the ankles and wrist-joints previous to death. In this case post-mortem abscesses were found in the sheaths of the tendons of the tibiales antici and extensores communes digitorum.

January 11, 1883.

Election of members.

Mr. R. J. Collyns read his paper on 'The Study of Nervous Diseases.'

The author gave as the two chief reasons for bringing this subject before the Society—

First, that comparatively little is known of it by the great majority of medical men who have been in practice for some years.

Second, that the subject is much neglected by students of the present day.

After pointing out how important a knowledge of the subject is, he gave several instances of mistakes in the diagnosis of nervous diseases that had come under his observation, and of inappropriate treatment resulting therefrom; he next pointed out why

the study of nervous diseases is so difficult to the majority of students, and suggested how the task might be made easier.

He reiterated the assertion that 'anatomy and physiology form the basis of all medical and surgical knowledge, and are inseparable elements in the study of disease,' and stated that no better examples than the study of nervous diseases could be found of the dictum that 'a knowledge of disease can only be acquired after one has become familiar with the phenomena of health.'

He then pointed out how often the anatomy and physiology of the nervous system is neglected by students, and how limited is their knowledge of these subjects, and proceeded to argue that this is the reason why the study of nervous diseases comes to be so uninteresting and difficult to them afterwards.

With the object of showing how intimately connected are the morbid anatomy, pathology, and symptoms in this class of diseases, the author explained the regional anatomy of the spinal cord, and pointed out how each region must be regarded as a separate organ endowed with special functions, and that a lesion of each region was associated with a special group of symptoms, the combination of which produce complex forms of disease. He further selected the anterior horns of grey matter and the diseases dependent on a lesion thereof to illustrate the point. In these anterior cornua are situated large ganglion cells which are the centres for a variety of processes, viz., for the nutrition of muscles, for reflex action, and for their electro-contractility. Hence it follows that if these cells are destroyed, the muscles with which they are connected are not only completely paralysed, but also waste rapidly, lose their reflex action and their electro-contractility. In consideration of these facts there is established a class of diseases named by Charcot 'spinal myopathies,' of which the three chief varieties are: (1.) Infantile paralysis; (2.) Spinal general paralysis; (3.) Progressive muscular atrophy; or, named according to their pathology: (1.) Acute, (2.) Subacute, and (3.) Chronic anterior polio-myelitis. Each of these diseases depends upon a lesion (probably inflammatory) of the great motor ganglion cells, and the difference in the nature and progress of each of them depends upon the different degree of inflammatory action in the motor cells and their neighbourhood. As the lesion is developed with more or less rapidity according to the severity of the inflammation, so are the symptoms developed more suddenly and are more serious. As the morbid process in the spinal cord is arrested wholly or in part, so do the symptoms mitigate altogether or only partially; and as the lesion in the cord is mended and the parts regain their function, so do the symptoms cease, and perhaps disappear entirely; or if the lesion be chronic and slowly progressive, so do the symptoms remain and so they progress.

If we take any other disease of the spinal cord, we find a similar relationship between morbid anatomy and symptoms of disease; so that if one can carry in the mind a diagram of the spinal cord in transverse section divided into regions, and know that in diseases which have received special names a certain region or regions of the spinal cord is affected, he will know the most important symptoms of each disease by considering what will happen if the functions of the particular part of the cord are arrested.

The author, after expressing a hope that soon the regional anatomy of the brain will be as well defined as that of the spinal cord, and that thereby cerebral diseases may be simplified, concluded his paper by again urging the necessity of more thorough knowledge of the anatomy and physiology of the nervous system, and of associating symptoms of disease with morbid anatomy and pathology. Studied in this way, he felt sure that the subject of nervous disease would become a pleasure rather than a toil.

January 18.

Election of members.

Mr. Harper showed a case of injury from a pistol-shot wound in a lad aged 15. The patient was shot in the lip, the bullet knocking out the right canine and outer incisor teeth and entering the tongue. On being probed, the wound in the tongue was found to pass back towards the pharynx, but no bullet could be felt. Five days subsequently the patient passed a flattened bullet per anum, showing on it the impression of the teeth.

Mr. Harper then read a paper 'On Erysipelas.'

He first classified the disease into three kinds—cutaneous, cellulo-cutaneous, and cellular—and proceeded to describe at some length the characters of the local inflammation in each of these three kinds, and also the general symptoms attendant on them; remarking that in the first class, in his opinion, enlargement of the lymphatic glands is not nearly so common an occurrence as ordinarily supposed. He said also that the most pathognomic sign is the abrupt and spreading margin of the inflammation.

Treatment was then discussed, the speaker recommending in the cellulo-cutaneous form multiple incisions, which may sometimes succeed in cutting short an attack. The necessity for the administration of alcohol was then dealt with, Mr. Harper being of opinion that in many cases what had been supposed to be delirium was simply due to overdoses of brandy; that alcohol could never be relied upon to lower the temperature (except in a single and very excessive dose), and that it lessens the excretion

of urea, an important thing to be remembered in cases of erysipelas, in which patients often have kidney-disease of some kind. The pathology and ætiology of the disease were then spoken of, arguments being adduced against the disease being of the nature of a specific fever.

January 25.

Election of members.

Mr. Ernest Clarke read a paper on 'Congenital Abnormalities.'

He confined his remarks to abnormalities of the head and face. Beginning with hare-lip and cleft palate, he described the various operations commonly used for their cure, deprecating the use of hare-lip pins used in the former, himself preferring stout silver wire and leaden buttons.

He then discussed the subjects of nævus and meningocele; for superficial nævi on the face he thought ethylate of sodium better than nitric acid.

February 1.

Election of members.

Mr. Steedman showed a microscopic specimen of milk from the breast of a male child fourteen days old.

Dr. Steavenson opened the medical discussion on 'Diphtheria.' Dr. Steavenson's paper is printed *in extenso* in the *Medical Times and Gazette*, February 24, 1883.

February 8.

Election of members.

Mr. Berry showed a dissected specimen of spina bifida, complicated by a cutaneous cyst which lay over it, and which had not been diagnosed during life. The tumour had on three separate occasions been injected with Morton's solution of iodine and glycerine, and death had followed the third injection after about twenty hours.

Mr. T. W. Shore then read a paper on 'Bright's Disease.'

The author commenced by giving a brief account of the history of our knowledge of the diseases of the kidney prior to the establishment of Bright's disease on a sure basis. Dr. Matthew Baillie's description of the 'cystic kidney' under the name of 'hydatid disease' was alluded to. It was shown how the discoveries of Bright were in a certain measure anticipated by Drs. Wells and Blackall. Dr. Bright's publication, in 1827 and 1836, of the results of his labours and investigations on diseases

of the kidney were especially dwelt upon, and the confirmation and extension of his results by Dr. Christison in Edinburgh and Dr. Osborne in Dublin were summarised.

The paper was almost entirely pathological, and dealt exclusively with the 'large pale' and the 'granular' kidneys. The causes of chronic nephritis were discussed, and particular importance laid upon 'suppression of perspiration' by cold and damp. The effects of alcohol, scrofula, rickets, and malaria were incidentally touched upon. Scarlatinal nephritis was held to be truly a sequela, and not an integral part of the disease; and was held to be due in a great measure to interference with the functions of the skin during the febrile attack. The author next discussed the relation of chronic interstitial nephritis to chronic gout and chronic lead-poisoning.

Bright's disease was held to be always of constitutional origin, and the author believed that in most cases the parenchymatous and fibrous parts of the kidney were simultaneously involved, and that in some cases the parenchymatous lesions predominated, and in others interstitial.

The symptoms associated with the 'large pale kidney' were briefly described, and the pathology of 'uræmia' dwelt upon. The author supported Traube's theory of œdema and anæmia of the brain, but admitted that it would not explain all cases of 'uræmia.'

The symptoms characteristic of the 'small granular kidney' were then mentioned, and the pathology of the changes in the heart and arterial system fully discussed. It was Dr. Bright who first described the hypertrophy of the left ventricle in chronic interstitial nephritis, but Dr. Johnson who first described the changes in the arterial coats.

After discussing the views of Bright, Johnson, Traube, and of Gull and Sutton, the author explained his own view on the subject, which supported in a measure that of Johnson, but differed in that Johnson believes the small arteries to resist the passage of blood to the tissues, whilst the author contends that the tissues offer this resistance, and the arteries try to overcome it.

Finally, the author discussed the relation of the 'large pale' and 'contracted granular' kidneys to each other; and whilst admitting the strength of the arguments in favour of the distinctness of the two diseases, yet expressed it as his opinion that in many cases the disease is one of the whole kidney, both parenchyma and interstitial tissue being affected; and that in many cases a 'large pale kidney' subsequently becomes a 'contracted granular' one. In support of this view the author quoted a case in which a contracted granular kidney was found post-

mortem in a young man, the kidney affection dating from an attack of scarlatina only four months previously. He also pointed out that post-mortem many conditions of kidney are found which are intermediate between the 'large pale' and the 'contracted granular,' and that in some cases in which a typical contracted granular kidney was found post-mortem, the symptoms during life were rather those which we have been accustomed to regard as typical of the 'large pale kidney.' The author regarded the symptoms usually described as typical of the large pale kidney to be rather those of an acute exacerbation, which may occur at any stage of the more chronic disease, either in the stage of 'large pale' or of 'contracted granular,' or in what are really intermediate conditions.

February 15.

Mr. Campbell read a paper 'On Reason and Instinct in Relation to Medicine.'

Life being an expenditure of force, living matter requires a perpetual supply of force from without. The inflow of force comes in the shape of food and oxygen. Oxygen is a simple element abounding on all sides. It is therefore easily procured, and the physiology of oxygen inflow is well understood, but food is widely different. Protoplasm cannot build up its structure out of any matters which are indiscriminately presented to it. In addition to water and salts, organised matters from the animal and vegetable world are requisite, and these differ widely for the various species of animals. Hence the organism must be provided with special means by which such supply shall be obtained, with a special machinery which shall mediate between the organism and the outer world. This connecting bond is provided by instinct. A connection with the outer world is further requisite for the following reasons:—

b. In the case of all unisexual (dicœcious) organisms, to provide for the union of the sexes.

c. To avoid that which is inconsistent with life and health, *e.g.*, animal foes, the hostile forces of Nature, as excessive heat or cold, &c.

d. For such pleasurable exercises as are essential to the normal nutrition of the organism.

Hence instinct may be defined as that which serves as a connecting medium between an organism and the outer world with a view to (*a.*) The procuring of food; (*b.*) The procreation of the species; (*c.*) The avoidance of that which is inconsistent with life

and health; (*d.*) The performance of such pleasurable exercises as are essential to healthy nutrition; and is not reason.

The original necessity for the connection with the outer world lay in the procuring of food. The struggle for this is the great factor at the root of Darwinism. With the resulting specialisation of organs and evolution of species, *b*, *c*, and *d* become necessary.

Let us briefly trace the evolution of *instinct*, using the term as defined, viz., to cover all those various means, other than reason, by which an organism is brought into relation with the outer world.

1. There is first no specialisation of parts (amœba), *i.e.*, all the great properties of life (consciousness excepted) are equally manifested by the undifferentiated protoplasm. The undifferentiated nervous system provides for the connection with the outer world.

2. Differentiation of certain specially irritable cells (eye spots) on the surface of the organism (mesembryanthus). This is the first appearance of the nervous system, and it is interesting to observe in connection with this that the cerebro-spinal system of man is developed from the epiblast, showing that the original function of the nervous system was to provide a connection with the outer world.

3. Development of reflex nervous system (*e.g.*, medusa), which is set into action by contact with gross substances, *i.e.*, a 'touch reflex system.'

4. Development of other reflex systems, *e.g.*, the 'light and sound reflex systems,' *i.e.*, reflex systems which are set agoing by means of the æther and air respectively (insecta).

All these animals are unconscious automata. Those in class 3 and 4 are entirely reflex, in fact, vitalised puppets, the strings of action being the afferent nerves and their peripheral nerve terminations and the *agencies* at work pulling them, the external forces of nature, *e.g.*, æther-waves, sound-waves. This statement will presently receive qualification.

5. Evolution of consciousness—*conscious reflex organisms.* It is impossible to say at what particular part of the scale consciousness first appears. The author is inclined to place its first appearance in the lowest vertebrata. These possess crude sensations, the first rudiments of mind. These sensations may prompt to action, but there is no intellect (= reason). The essentials of intellect being (*a.*) Consciousness of difference; (*b.*) Consciousness of agreement; and (*c.*) Retentiveness (Bain).

6. Evolution of intellect.—*reflex reasoning organisms,* the reflexes predominating, *i.e.*, their actions are regulated more by involuntary reflex processes than by reasoning (the higher vertebrates). Experiences are stored upon knowledge to be acted

upon in the future. This is a most important period in evolution. The organism is no longer a passive creature in the hands of Nature, but able to bend external forces to its will.

Man, a reasoning reflex organism, reason predominating. Thus as we ascend the scale we find simple instinct growing into reason, that instinct which commenced as a simple link between the organism and the outer world with the sole object of securing to it a perpetual inflow of force, this developed into the mature mind, no longer a mere slave to the body, but a separate entity overshadowing all else.

Pure instincts (omitting for the present the instinct exhibited by classes 1 and 2, which scarcely come under the ordinary meaning of the word) are either simply reflex, acting independent of any mental element (classes 3 and 4), or they are reflex acts set agoing by hereditary feelings. These latter are instincts in the ordinary sense of the word, and are exhibited by the remaining classes, 3, 6, and 7. In classes 6 and 7 the instincts may be tinged with intellectual processes.

Now the essence of instinct is that it is inborn, viz., inherited. The instinctive reflex movements are 'co-ordinated,' or, to put it in plain English, directed by nerve-centres. The muscles are obedient slaves; they have nothing at all to say in the matter. This latent directing power of nerve-centres is dependent upon their molecular constitution. A transmission from parent to offspring of such molecular constitution means a transmission of the reflex movements which lie, so to speak, inherent in them. The same is true in regard to transmitted feelings.

It is well known to comparative physiologists that as we ascend the scale inherited reflex movements tend to die out, until in man they are almost entirely absent. This is due to the fact that as the intellect is evolved fresh movements are dictated which lead the animal out of the beaten track of mere reflex instinct, and as these new voluntary acts increase the reflex systems are less frequently set into action, and eventually *many of them* tend to disappear. In regard to the evolution of consciousness, it is obviously impossible to say at what particular part of the animal scale it first appears. A few remarks only can be made on this subject. The cerebrum is the region of consciousness in vertebrata. It diminishes in size as we descend the vertebrate scale, the lower reflex portions of the brain increasing in size. Hence the animal grows more and more reflex while the mental element dwindles. In the lowest vertebrates the cerebrum is excessively minute, and hence we may infer that in them mind is of the most rudimentary standard, amounting to a bare consciousness. Now this cerebrum,

this organ of consciousness, is absent in invertebrates. Descartes' hypothesis, that all animals below man were unconscious, is obviously untenable in this latter half of the nineteenth century; but the question here forces itself upon us, have invertebrates any consciousness? The author can here only shortly state that he is inclined to believe that they have none. In his opinion an animal may have eyes, ears, and all the organs of special sense, and yet neither see, hear, touch, &c., these organs merely subserving a reflex function; the eye, for example, belonging to a reflex system, which is set into action by æther waves, and the ear to one which is set agoing by waves of sound. The author believes that all the special senses originated as such reflex systems, the special form of consciousness being subsequently superadded. Consciousness is the supremest effort of protoplasm, the acme of evolutionary triumph, and yet we find such men as Gegenbauer willing to endow undifferentiated protoplasm with that which analogy should teach us can only belong to the most highly differentiated nervous matter.

We have seen that instinct is the chief guide to all the lower animals. Now we come to the important fact that instinct is a product of natural selection. It is the unerring voice of Nature, and directs with perfect wisdom an animal's steps through life. Now, this true and perfect guide, '*instinct*,' flies before the approach of reason, and the question now arises, Have we in reason, in the intellectual guide, an equally true directing guide? The answer is most emphatically *No*. Let us analyse the intellectual guide with a view to discovering its imperfections. The ways of men, as far as they relate to food, raiment, and general mode of life, are largely governed by a knowledge gained from experience. Now, in the first place, even possessing the knowledge how to act on a given occasion, men, through a special weakness in the mind, called imprudence (*vide* Bain's definition), frequently refuse to be guided by it. A vast host of diseases are the outcome of this mental deficiency or imprudence. Secondly, our knowledge gained from experience is frequently imperfect, and man has then to reason out his actions. Now, in order to arrive at a correct decision, he must be provided with sufficient data; but when the question at issue relates to habits and modes of life, what are the data? Are they not the hidden laws of life? The logical conclusion is that man, finding himself bereft of that true and perfect guide, instinct, and that he has frequently to reason on the best course to be adopted, should furnish himself with the necessary data, and the shortest way of doing this is by vivisection. By this means we hurry on the slow process of natural experiment or experience by the quicker one of artificial experiment. Vivisection is then the offspring of evolution. Yet even when we do possess

sufficient data, our judgments are frequently unsound. For these several reasons the intellectual guide is imperfect.

The evolution of the intellect (reason) has put a strong check on the operation among men of the great principle of evolution. We may consider evolution in two aspects: (1.) Structural evolution, which results in alteration of bodily confirmation; (2.) The evolution of instinct and reason. In regard to the first, we find that among men there is no longer a selection of those physically most fit. Moreover, the evolution of the moral faculty prevents us from permitting those to die who are physically unfit to fight the fierce battle of life. The same applies to those who are mentally deficient, and thus it is that we have hospitals and asylums for those who are mentally and bodily crippled. There is thus no weeding out of the mentally and bodily deficient, and hence a certain mental and physical mean is established. The man of fine physique marries a sickly woman or *vice versa*, or the philosopher unites himself to a simpleton. Yet the operation of natural selection is still clearly to be seen among men. It is, however, no longer a physical selection, but an intellectual one. As we ascend the scale we find physical aptitude playing a less and less prominent part in natural selection, instinctive cunning becoming more and more potent, until in civilised man intellectual endowment is almost the sole factor in the struggle for existence. Among savages, the strongest, most courageous, and cunning man will force himself to the head of the rest; but among civilised peoples, a man by mere intellectual superiority can command the destiny of nations. Thus among men natural selection still operates in forming the various grades of society.

February 22.

Mr. Howe showed dissected specimens of joints from a boy who died in the hospital from hæmophilia.

Mr. Jessop then read a paper on 'A Blow on the Eye by a Blunt Instrument and its Consequences.'

In this paper injuries to the globe only were considered. Speaking of sub-conjunctival and other superficial ecchymoses, mention was made of the rapidity with which blood is usually absorbed in such cases. Ruptures and other injuries of the iris were next touched upon, and then the lens was considered. Dislocation of the lens was stated to take place in one of three ways, viz., into the posterior chamber, into the anterior chamber, or sub-conjunctivally; the treatment being to allay pain and remove the lens as soon as possible, unless it was becoming absorbed.

Hæmorrhage into the vitreous was then discussed, and a case was related in which a considerable hæmorrhage into the vitreous was absorbed in less than two hours. Finally, rupture of the eyeball was dealt with, and the treatment mentioned.

March 1.

House Surgeons' Evening.

The subject chosen for discussion was diseases of the knee.

Mr. Square spoke first of loose cartilage, describing the various sources of origin and discussing the necessary operative treatment. He gave statistics of forty-four cases which he had collected, in only two of which had there been suppuration in the knee-joint after the operation.

Mr. Colville then spoke of strumous disease of the knee, discussing briefly its pathology, symptoms, and treatment.

Mr. Howe referred to the various diseases of the knee which do not implicate the joint, viz., enlarged bursæ, suppuration around the joint, and diseases of the ends of the bones.

Mr. Harper spoke on the subject of injuries of the joint, and paid special attention to punctured wounds of the joint and fracture of the patella.

After the discussion the secretary read out the names of candidates proposed by the committee to fill the various offices of the Society during the ensuing year.

March 8.

Election of members.

Dr. King showed a case of dilated arch of the aorta.

Mr. Bowlby showed a specimen of cyclopian fœtus, having one eye immediately above the mouth, and a short proboscis-like projection above the eye.

Two auditors for the year—Mr. Colville and Mr. Mason—were then appointed.

Dr. King read a paper on 'Dyspepsia.'

He divided his subject into two heads, namely, primary or gastro-enteric, and secondary or interstitial dyspepsia. The latter, he said, was common in many of the dyscrasiæ, such as cancer, and was due to an error of assimilation. Primary dyspepsia he divided again into functional, sympathetic, and symptomatic.

He discussed fully the question of diet in relation to dyspepsia, and illustrated his remarks by cases which had been under his care in the Casualty Department of the hospital. Prolonged lactation he considered to be a fertile source of dyspepsia in children. He condemned the use of Swiss milk for infants.

After the discussion the Secretary read out the names of candidates proposed as officers of the Society for the following year by members other than the committee.

March 15.

Annual general meeting. Election of members.

The auditors read the accounts of the Society.

Two scrutineers of votes having been appointed, the election then took place of members of the committee for the following year. Those elected were:—*Treasurer,* Mr. Savory; *Presidents,* Dr. Collins, Mr. Howe; *Vice-Presidents,* Mr. Berry, Mr. S. Paget; *Hon. Secretaries,* Mr. Harding, Mr. Hind; *Additional Committee-men,* Mr. A. E. Wynter, Mr. Crouch.

DESCRIPTIVE LIST

OF

SPECIMENS ADDED TO THE MUSEUM

DURING THE YEAR 1883.

SPECIMENS ADDED TO THE MUSEUM

During the Year ending October 1, 1883.

BY

ANTHONY A. BOWLBY.

SERIES I.

DISEASES OF BONES.

31a. A Humerus, the whole of which is completely necrosed. The upper epiphysis is separated from the shaft, but the periosteum is attached in shreds to the greater part of the circumference of the bone, being separated to only a very slight extent at the upper and posterior surface of the shaft. In the recent state the medullary canal was filled with a soft semi-purulent mass.

From a girl aged 14 years, who died of pyæmia.—See *President Ward Book*, vol. viii. p. 430.

74a. Section of a Femur affected with Osteitis Deformans. The whole bone is curved in an outward and forward direction, the curvature affecting the entire length of the shaft, though most marked in its upper half. The shaft itself is much increased in circumference and very flattened in its antero-posterior diameter; the girth of the thickest portion measures as much as $6\frac{1}{4}$ inches, measurements of normal femora at the same level averaging about $3\frac{1}{2}$ to $3\frac{3}{4}$ inches. The entire surface is rough and uneven from the presence of flattened, nodular growths of new periosteal bone, most marked in the upper third and along the linea aspera, and almost absent from the lower sixth of the shaft. The articular surfaces of the condyles are natural. The neck of the bone is placed at right angles to the shaft, but is not shorter than normal; the canals for blood-vessels about its base are unusually large. Some parts of the head and neck present changes exactly similar to those noted in an early stage of rheumatoid arthritis, the bone being smooth and porcellanous, with outgrowths of nodular osteophytes, and with the worm-eaten appearance so common in this disease. On making a longitudinal section, the first thing noticed

was the very soft state of the bone, and the ease with which it might be sawn. The medullary canal is irregular in shape, and its calibre is encroached upon by new bone, sometimes of a hard, porcellaneous appearance, and again of a more cancellous nature. The compact tissue is immensely increased in thickness, and there is a general tendency exhibited to a separation of its constituent laminæ. At about the centre of the shaft, in the anterior portion of the sawn bone, is a small cavity about the size of a nut, which contained a sequestrum of rather hard bone; similar irregularly shaped cavities may be seen in other parts. The compact tissue of the upper articular surface is much increased, and the normal arrangement of its cancellous tissue destroyed.

The patient was a cabman aged 64, who died in the Hospital from a factured skull. For the last ten years of his life the right femur had become gradually bent, so that, at the time of his death, the right lower extremity was 2½ inches shorter than the left. The progress of the deformity was not marked by any pain. The patient had suffered occasionally from gout, but was otherwise healthy. All the remaining bones were normal. The other half of the specimen is in the Museum of the Royal College of Surgeons.—See account of case by Mr. Bowlby in *The Transactions of the Pathological Society*, vol. xxxiv. p. 193.

74b. Section of a Femur. It is very little greater in circumference than natural, but is bowed forwards in one uniform curve, fairly equally distributed over the whole length of the shaft, so that when the bone rests by its two extremities on an even surface, the under portion of the centre of the femur is raised 2¾ inches above the subjacent plane. There is absolutely no external curvature. The surface is slightly roughened by the deposit of thin irregularly placed laminæ and spicula of new bone, widely diffused over the entire shaft. The head and trochanters are natural, the condyles are flattened, and around their margins and on the surface of the external one are nodular outgrowths of new bone. A longitudinal section shows considerable thinning of the compact osseous tissue, a condition which is most marked in the lower third of the bone. Immediately above the condyles is a small cavity, containing masses of a soft material exactly resembling cheese, and above this the spaces of the cancellous tissue are much widened and filled with a substance having the consistence of soft mortar. At first sight the medullary canal appears filled up with sclerosed bone, but a closer investigation shows that this is only the case to a very limited extent, and that the material that mainly blocks it up readily receives the impress of the nail, and is apparently of the same nature as the mortar-like substance already mentioned. An inch below the small trochanter is a cavity similar to but smaller than that at the lower end of the bone, not bounded by any distinct walls and containing a like cheesy material.

From a man aged 64, who died of morbus cordis. When ten years old he met with an injury to his leg; this was followed by extensive suppuration, and for some years he was unable to get about. His knee became stiff and his thigh bent, so that in a few years the latter assumed its present shape. There had been no increase of the deformity for the last forty years of his life. The limbs were of equal length, and three adherent scars marked the site of the former suppuration.—The specimen is described by Mr. Bowlby in *The Transactions of the Pathological Society*, vol. xxxiv. p. 192.

284a. Sections of a Tibia from a child who had formerly suffered from

rickets. The bone presents a sharp anterior curve, the concavity of which is partly filled up by a considerable quantity of white compact bone.

288a. Sections of the Humerus of a rickety child. The whole bone is extremely soft, and can readily be bent in any direction. The compact bone is thinner than natural, and is surrounded by thickened periosteum. At the centre of the shaft is a fracture, three weeks old, surrounded by a considerable deposit of callus. The line of fracture of the upper epiphysis is irregular.

376a. A large exostosis removed from the shaft of the Femur of a lad aged 19. It is composed of compact bone, surrounded by a thin layer of cartilage, and had a very extensive base of attachment.

SERIES II.

DISEASES OF JOINTS.

673a. The articular ends of the Humerus and Ulna which enter into the formation of the elbow-joint. The cartilage over the capitellum is entirely removed, and the subjacent bone is smooth and polished. Around the edges of the articular surfaces of the humerus are nodular outgrowths, partly composed of cartilage, partly of bone. The upper end of the ulna exhibits similar outgrowths of the articular cartilage, more especially over the coronoid process, which is thereby considerably hypertrophied. These pedunculated growths project into the joint cavity.

673b. The upper end of an Ulna, showing change of a character similar to those seen in the preceding specimen. The overgrowth of the coronoid process is, however, much more marked, this portion of bone being about three times its usual size.

691a. A Right Knee-Joint, exhibiting the changes typical of rheumatoid arthritis. The synovial membrane is thickened and pulpy, the cartilages are fibrous and eroded, and present an uneven irregular surface. The crucial ligaments are partly destroyed, and the other ligaments around the joint are thickened and softened. The bones are eroded and roughened over various parts of the articular surface.

From a man aged 49, who had sustained an injury in the knee three years before coming to the Hospital. This had resulted in stiffness of the articulation. Three months before the limb was amputated the anchylosis gave way, and the knee yielded so that the bones bulged backwards into the popliteal space, and the front of the leg became concave. A cast of this joint is preserved, No. 33a.—See *Pitcairn Ward Book*, vol. vii. p. 425.

712b. A Pedunculated Growth removed from the Knee-Joint. It is composed of thickened synovial membrane.

713a. A loose cartilage from the Knee-Joint. It is composed of fibrous tissue and cartilage, the latter being in some places calcified. It was attached to the synovial membrane by a slender pedicle.

Microscopic sections are preserved, No. 53d.

714a. A loose body removed from the Knee-Joint. It is composed of a loose fibrous tissue, and was attached to the synovial membrane.

714b. A small loose body, composed of hard bone covered by a layer of cartilage, removed from the Elbow-Joint of a young man. It was attached to the synovial membrane.

716a. A flattened, soft, pedunculated mass of Synovial Membrane, removed by operation from the Knee-Joint of a patient who had suffered from symptoms of 'loose cartilage' for several years.

A microscopic examination shows that the synovial membrane has previously been inflamed, and that the inflammatory products have in some parts undergone a caseous degeneration, and in others become organised into a loose fibrous tissue.

Microscopical sections are preserved, No. 53e.

SERIES IV.

INJURIES OF JOINTS.

1017a. Portion of a Clavicle with the upper piece of the Sternum and the first rib. The sternal end of the clavicle is dislocated downwards and forwards, the rhomboid ligament is torn through, and the head of the bone protrudes between the sternal and clavicular attachments of the sterno-mastoid muscle.

SUBASTRAGALOID DISLOCATION.

1053a. The lower ends of the Tibia and Fibula, with some of the bones of the Tarsus. Nearly the whole of the ligaments uniting the astragalus to the rest of the bones of the foot have been torn through, and their remains hang in shreds from the bones they unite. The astragalus itself is slightly broken at the attachment of the anterior portion of the external lateral ligament, and a small piece of the scaphoid is torn off. The anterior ligament of the ankle-joint is also partially rent, and the ankle-joint opened. The astragalus maintains its position relative to the tibia and fibula.

From a woman who fell out of a second-floor window, and died from other injuries. The whole foot was very loose, and could be displaced in almost any direction.

SERIES VI.

DISEASES AND INJURIES OF MUSCLES, TENDONS, AND BURSÆ.

1185a. A Ring-Finger which was torn off through being caught in the cog-wheels of a printing machine. The flexor tendons are torn out at their muscular attachments.

1198a. Longitudinal section of a Tendo Achillis. The specimen was taken from the leg of a girl in whom a portion of the tendon had been resected more than two years previously on account of Talipes Calcaneus complicating infantile paralysis. The seat of this operation is marked by a considerable scar on the cutaneous surface, but the tendon itself has been entirely repaired.

The operation did not materially benefit the patient, and the foot was amputated on account of its uselessness.

Microscopical sections of the repaired tendon are preserved, No. 57b.

SERIES VII.

DISEASES AND INJURIES OF THE PERICARDIUM AND OF THE HEART.

1241a. A Heart with enormous Hypertrophy of the left Ventricle. The valves are healthy.

From a man who suffered from chronic nephritis. One of the kidneys, which were granular and contracted, is preserved in Series xxviii., No. 2335a.

SERIES VIII.

DISEASES AND INJURIES OF ARTERIES.

1393a. The Transverse part of the Arch of the Aorta, with the Subclavian and Axillary Arteries, from a man in whom the Subclavian had been ligatured for axillary aneurysm eighteen months previously. The operation was followed by secondary hæmorrhage, and amputation was performed at the shoulder-joint. The subclavian is completely occluded just outside the origin of the thyroid axis, the branches of which are patent; a small blood-clot adheres to the wall of the vessel between the seat of ligature and this trunk. On the distal side of the ligature the superior intercostal arises, and was found patent throughout its course. From the remainder of the artery, between the seat of ligature and the stump, several other branches are given off, all of them being patent. The clot formed in the artery where it is tied on the face of the stump is continuous with that formed at the original seat of ligature, the two being connected by a long thin band of decolorised fibrin, floating free in the artery to a great extent, but adherent by its extremities. This clot appears to be of old formation. About two inches above the stump the artery is the seat of an aneurysmal dilatation.

1430a. The Heart and part of the Aorta of a child aged 5 years. The mitral and aortic valves are thickened, and the latter are, in addition, partly destroyed by ulceration and covered by small masses of fibrin. Immediately beyond the valves the aorta presents two patches of ulceration, the largest being about the size of a sixpence, the smaller as big as a split pea. The floor of the former is irregular, and is mainly formed by the middle coat, the subjacent pericardium being thickened and closely adherent. The smaller ulcer has penetrated through more than half the thickness of the aorta, and at both diseased spots the wall of the artery shows a distinct aneurysmal bulging. A very slight deposit of fibrin may be seen on the endothelium higher up the aorta, which elsewhere was perfectly healthy.

See *Post-Mortem Book*, vol. ix. p. 238; and account of case by Dr. Moore in the *Transactions of the Pathological Society*, vol. xxxiv. p. 71.

SERIES X.

DISEASES AND INJURIES OF THE LARYNX AND TRACHEA.

1633b. A Larynx and Trachea from a patient who died of tuberculous phthisis. The rima glottidis is much narrowed by the swollen and œdematous condition of the arytæno-epiglottidean folds, the mucous membrane of which, however, is not ulcerated. The under surface of the epiglottis and the mucous membrane lining the larynx and trachea is extremely roughened and granular.

1641a. A Larynx showing ulceration and destruction of the tip of the Epiglottis.

From a patient who died of typhoid fever in the fourth week of his illness.

TUMOURS CONNECTED WITH THE TRACHEA.

1656a. A Papillary Growth removed from the Trachea.

The patient was a woman aged 35 years, and had suffered from symptoms of obstruction to respiration for about twelve months. After laryngoscopic examination, the growth was removed by tracheotomy; it was adherent for about one inch to the second, third, and fourth rings of the trachea, and was not pedunculated.

Microscopical examination showed the growth to be a simple papilloma of an innocent nature. Sections are preserved in the microscopical cabinet, No. 67a, Series lv.—See *Lawrence Ward Book*, vol. ix. p. 95, and account of case by Mr. Butlin in *St. Bart. Hosp. Reports*, vol. xviii.

1655a. A Tongue and Larynx extensively affected with Epithelioma. The disease has entirely destroyed the whole thickness of the base of the tongue and penetrated to the floor of the mouth. The epiglottis and the right vocal cord are destroyed.

SERIES XI.

DISEASES AND INJURIES OF THE PLEURÆ, BRONCHIAL TUBES, AND LUNGS.

1681b. The Larynx, Trachea, and Right Lung of a child aged 5 years, who had inhaled a nut into the air-passages four days before death. In the posterior and outer wall of the trachea, just above the bifurcation, is a ragged ulcerated hole communicating with an abscess cavity in the surrounding tissue and containing the nut, part of which lies in the trachea and part in the cavity; a small portion of the tissue of the lung is collapsed, and in the very centre is a cavity, which in the recent state contained about two teaspoonfuls of pus. Small grey tubercles, some of them being quite calcareous, are scattered throughout the lung, which is in a condition of capillary bronchitis. There is a tracheotomy wound just below the cricoid cartilage.

Tracheotomy was performed the day ufter the nut was supposed to have entered, but afforded no relief to the symptoms. There were old pleuritic adhesions, and the liver and spleen were tuberculous.—See *President Ward Book*, vol. ix. p. 71.

SERIES XII.

DISEASES AND INJURIES OF THE NOSE, MOUTH, TONGUE, PALATE, AND FAUCES.

1760a. A large Lobulated Growth removed from the Nose of an old man, where it had been growing for several years. The surface of the tumour is thickly studded with the orifices of enlarged sebaceous follicles. A cut section is firm and fibrous, but in places contains sebaceous material.

A microscopical examination showed that the tumour consists of enlarged sebaceous glands held together by fibrous tissue.
Sections are preserved, No. 73f., Series lv.

1768a. A large Lobed Naso-Pharyngeal Polypus removed from a girl. It is composed of soft fibrous and mucous tissue.

1770a. A large Naso-Pharyngeal Polypus, 2 inches in its long diameter by $1\frac{1}{2}$ in breadth. Its cut surface is firm and fibrous, and its base of attachment broad and very vascular. The tumour grew from the bones at the base of the skull, and was removed through an opening made in the roof of the mouth. The patient was a boy aged 14 years, and made a good recovery.

On microscopical examination, the growth was found to consist of sarcomatous cells mixed with a good deal of loose connective tissue.

Presented by Thomas Smith, Esq.

1788a. Part of a Tongue, the surface of which is very rough and papillated. All the papillæ are much enlarged and the epithelium generally increased in thickness, so that the diseased part was considerably raised above the level of the rest of the tongue. There is nowhere any ulceration.

From a man who had first noticed a small pimple on his tongue five years previously. A year later he was under treatment at the Hospital, caustics being applied locally and iodide of potash administered externally. At this time the growth was about the size of a two-shilling piece, and steadily spread up till the time of removal, when it covered half the organ. A microscopical examination showed that not only was the thickness of the epithelium increased, but that in addition there was a very distinct epitheliomatous growth, large columns of epithelial cells dipping deeply into the subjacent muscular tissue, and containing large cell-nests. Microscopical sections are preserved, No. 77b, Series lv.; also a Drawing of the tongue before operation, No. 178a, Series lvii.—See *Darker Ward Book*, vol. ix. p. 45.

SERIES XIII.

DISEASES OF THE TEETH.

EPULIS ATTACHED TO TOOTH.

1798c. An Epulis attached to a Molar Tooth.

SERIES XVII.

DISEASES AND INJURIES OF THE STOMACH.

1908b. Portion of a Stomach in which is an oval chronic ulcer with raised and thickened edges, about an inch long and rather more than half an inch broad. In the very centre of the floor the ulceration has nearly completely penetrated the viscus. The pylorus was distant four inches from the ulcer, which is on the posterior wall at the lesser curvature. The wall of the stomach in the vicinity is much thickened.

DIPHTHERITIC ULCERATION.

1918a. A Stomach from a child who died of Diphtheria. At the cardiac orifice the mucous membrane is covered by several small shreds of membrane.

1950a. The Stomach and Œsophagus of a child aged 2 years and 3 months, on whom the operation of gastrostomy was performed on account of stricture caused by swallowing a solution of caustic potash. The œsophagus presents an extreme contraction and thickening of its coats, commencing about 4 inches from its upper orifice and extending downwards about $1\frac{1}{2}$ inch, the tube being somewhat dilated above. The wound shows scarcely any signs of healing, and both its edges and the skin where the deep sutures have been passed are in a sloughy condition. Scarcely any adhesion has taken place between the contiguous surfaces of

peritoneum, so that the peritoneal cavity is in free communication with both the stomach and external air; nevertheless there was no escape of food or signs of peritonitis. The child lived a fortnight after the operation. The potash had been swallowed seven months previously.

See *Darker Ward Book*, vol. viii. p. 237.

SERIES XVIII.

DISEASES AND INJURIES OF THE INTESTINES.

1966a. Portions of a Duodenum and Stomach. Immediately beyond the pylorus are four irregularly shaped ulcers, with raised indurated margins and deeply excavated bases. One of these has perforated the intestine, with the exception of the peritoneal coat. The pancreas is firmly fixed to the gut by strong adhesions.

From a man aged 49, who died of pulmonary mischief of long standing. No symptoms pointing to the condition of the duodenum were noticed during the time he was in the Hospital.—See account of case by Dr. Moore in the *Transactions of the Pathological Society*, vol. xxxiv.

1990a. A portion of Ileum showing the enlargement of Peyer's patches and of the solitary glands, which is typical of the first stage of typhoid fever.

2018a. A Cæcum with portions of the contiguous intestine. The small intestine is much dilated, and immediately above the ileo-cæcal valve is the seat of extensive ulceration, which gives a reticular appearance to the surface of the gut. The ridge of the ileo-cœcal valve is very low, and much of its structure seems to have been destroyed. The ileo-cæcal orifice is considerably constricted, so that it would barely give passage to a large probe. In the cæcum is the aperture of an operation wound, and, 3 inches farther down, the large intestine exhibits an ulcer in the transverse diameter of the gut.

From a man aged 47 years, from whom no previous history of abdominal obstruction could be obtained. Before death he suffered from complete obstruction for twelve days, when right lumbar colotomy was performed without affording any relief. The case is described by Dr. Moore in the *Transactions of the Pathological Society*, vol. xxxiv. p. 112.

2019b. Portion of a Colon, the mucous membrane of which is studded at intervals with small polypoid growths of a similar nature to those seen in the preceding specimen. They commence immediately beyond the ileo-cæcal valve, and may be found as far as about midway along the descending colon; they have no distinct relation to any particular portion of the circumference of the gut, and are quite separate from each other; some are sessile, others slightly pedunculated, all are soft, and both covered with and surrounded by healthy mucous membrane. They are formed entirely by a thickening of the submucous connective tissue.

From a man aged 60; there was no stricture of the rectum. The case is described by Mr. Bowlby in the *Transactions of the Pathological Society*, vol. xxxiv. p. 108.

2027a. A Cæcum with portions of the small and large intestines. Immediately above the ileo-cæcal valve the ileum is closely constricted by a cancerous growth in its walls, which on microscopic examination proved to be encephaloid carcinoma.

SERIES XIX.

DISEASES OF THE RECTUM AND ANUS.

2055a. A Rectum with the surrounding parts from a woman aged 42. The last two inches of the rectum exhibit numerous fistulous openings. A little higher up is a rather larger perforation, through which a catheter is passed into an abscess cavity in Douglas's pouch, capable of holding about half a pint of fluid. The lower part of the colon and the sigmoid flexure are closely adherent to the abscess wall, which in one place has so compressed the gut as to interfere with its calibre. The uterus is much flattened and forms part of the abscess wall.

The patient was admitted to the Hospital suffering from symptoms of obstruction of the large intestine. Colotomy was proposed, but the patient declined to submit to any operation. She had been treated for fistula in Guy's Hospital a year previously.—See *Stanley Ward Book*, vol. x. p. 173.

2064a. A very large Fibro-Cellular Polypus from the Rectum. Its surface is smooth, and presents a slight trace of lobulation; its base of attachment is about one inch and a half in diameter. On section, it appears to be composed of very loose gelatinous connective tissue, the spaces of which immediately after removal contained a considerable amount of fluid. The weight of the tumour when fresh was nearly two pounds.

The patient was a girl aged 24. She had suffered for some time with slight difficulty of defæcation, which, however, caused but little trouble. One day, while straining at stool, the tumour was extruded through the anus by the sphincter, by which it was tightly gripped, and became irreducible. It was then removed by transfixion of the base and ligature. Microscopic sections are preserved, No. 87d.—The case is described by Mr. Bowlby in the *Transactions of the Pathological Society*, vol. xxxiv. p. 107.

Presented by Dr. Everley Taylor.

SERIES XX.

HERNIA OR PROTRUSIONS, AND OTHER DISPLACEMENTS OF THE INTESTINAL CANAL AND OMENTUM.

2121a. An Inguinal Hernia. A portion of omentum has become adherent to the inner surface of the sac, close to the fundus.

2134a. Inguinal Hernia combined with Hydrocele of the tunica vaginalis.

2161a. The right side of a Pelvis with a portion of the Femur, showing a Strangulated Obturator Hernia. The sac is about the size of a plover's egg, and is protruded over the upper edge of the obturator externus muscle, the peritoneum forming it being considerably thickened and in immediate contact above with the ramus of the pubes. The obturator nerve and artery (both cut short) lie on the anterior surface of the hernial protrusion, the former occupying the more external position. A large artery from the internal circumflex winds around the outer side of the sac and anastomoses behind it with a branch from the obturator. A deeply congested portion of the ileum occupies the sac, and in the recent condition was slightly adherent to its front wall, there being scarcely any fluid present. The difference in calibre between the intestine above and below the stricture is well marked. The peritoneum at the crural ring is slightly bulged, and the head of the femur is the seat of old rheumatoid arthritis.

From a woman aged 69, who, without having ever suffered from any previous symptoms, was suddenly seized with severe pain in the abdomen followed by continuous vomiting and constipation. She died exhausted on the eleventh day of her illness.—See *Faith Ward Book* for 1882, vol. i. p. 734; and account by Mr. Bowlby in the *Transactions of the Pathological Society*, vol. xxxiv. p. 109.

2161b. Portion of the left side of the Pelvis from the same patient as the preceding specimen. An empty hernial sac rather larger than a nut occupies the upper part of the obturator foramen, immediately above the free edge of the obturator externus muscle. The obturator nerve lies directly over the front of the hernial tumour, while the artery divides at the posterior surface into its two main branches, which encircle the neck of the sac.

2191a. Portion of Intestine from an infant who had recovered from an attack of intussusception. The large intestine has almost entirely disappeared, being represented by three inches of the rectum, which has been cut just above the anus, and may be seen at the lower part of the specimen. At the junction of the rectum with the small intestine (*i.e.*, the place where the continuity of the canal has been re-established), the calibre of the gut is slightly narrowed by an annular constriction, the peritoneum at this place being scarred and puckered. Immediately above, the small intestine is thinned and dilated into a large pouch, while 2½ inches higher is a polypus composed of glandular and fibrous structures 1¼ inch in length. Around this growth the intestine is inflamed, ulcerated, and adherent to the neighbouring mesenteric glands. The rest of the intestine was normal.

The patient was a child aged 13 months, and was admitted into the Hospital with the history that twelve days previously she had been seized with severe pain in the abdomen, and since then had passed only blood and mucus. On admission, a portion of gangrenous gut was found protruding from the anus and was removed; three days later another and smaller portion came away, and in another week the patient had completely recovered. Two months later she died of congenital syphilis.

The case is described by Mr. Bowlby in the *Transactions of the Pathological Society*, vol. xxxiv. p. 106.
Microscopic sections of the polypus are preserved, No. 87e, Series lv.
A drawing is also preserved, No. 263a, Series lvii.

2191b. The two portions of Intestine alluded to in the descriptions of the preceding specimen. The upper one consists of a part of the cæcum and vermiform appendix, the lower apparently of part of the large intestine.

SERIES XXII.

DISEASES AND INJURIES OF THE GALL BLADDER AND BILIARY DUCTS.

2266a. A Gall Bladder and part of a Liver, showing a small epitheliomatous papillary growth in the former, and secondary cancerous deposits in the latter.

SERIES XXVIII.

DISEASES AND INJURIES OF THE KIDNEYS, THEIR PELVES, AND THE URETERS.

2331b. Amyloid disease of the Kidney treated with iodine. The organ is slightly enlarged and presents numerous brown dots, especially in the cortical portion, the result of the application of iodine.

2335a. A Kidney from a case of chronic Bright's disease. It is much smaller than natural, irregular in shape, roughened and torn where the capsule has been removed, and presents one small cyst in the cortical portion.

From the same patient as the hypertrophied heart, No. 1241a, Series vii.

2371a. A "Surgical Kidney." It is rather smaller than natural; its surface is irregular, and in parts torn where the capsule was adherent; the pelvis and calices are slightly dilated, and the mucous membrane lining them is discoloured and thickened. The gland as a whole is softened, and scattered throughout its substance, but more particularly in the cortical portions, are numerous abscesses, varying in size from a pin's head to a nut.

From an old man who died a few days after lithotrity had been performed. The middle lobe of the prostate was enlarged, the mucous membrane of the bladder showed signs of recent and old inflammations, and the opposite kidney was in a similar condition to the present specimen, neither of the ureters were much dilated, but the mucous membrane of both showed signs of old inflammation.

2372c. Portions of Kidney removed by the operation of lumbar nephrectomy. Very little of the glandular substance is to be seen, the specimen

consisting chiefly of the cortical substance dilated into cysts of irregular size and shape.

From a boy aged 17 years, on whom the operation of nephrotomy had been performed one year and nine months previously on account of continued pain in the left loin associated with pus in the urine. For more than a year after this he was much relieved from his previous symptoms, but for some months previous to the removal of the kidney had suffered from a more profuse discharge from the nephrotomy wound and steadily increasing hectic. The kidney was rather closely adherent to the surrounding structures. The patient made a good recovery. Microscopical examination revealed dilatation of the tubules, and an increase of the intertubular connective tissue.—See *Kenton Ward Book*, vol. vii. p. 204; *Harley Ward Book*, vol. ix. p. 8; and paper by Mr. Morrant Baker in the *Transactions of the International Medical Congress for* 1881, vol. ii. p. 262.

SERIES XXX.

DISEASES AND INJURIES OF THE BRAIN AND ITS MEMBRANES.

2446a. Portions of the left Parietal and Temporal Bones, showing a fracture running across the line of the middle meningeal artery. The artery is torn, and some blood-clot lies in the groove in the bone.

From a man aged 64, who fell off his cab, and was admitted into the Hospital drowsy and helpless. From this condition he rallied, and after ten days was able to sit up in a chair; on the thirteenth day from the injury he suddenly became comatose and died. A post-mortem examination showed a hæmorrhage into the arachnoid cavity, some of the blood being recent, while the smaller portion evidently dated back to the time of the accident. The vessels were atheromatous.—See *Kenton Ward Book*, vol. viii. p. 265.

TUMOUR OF PITUITARY BODY.

2504a. Portions of the body of Sphenoid Bone with the Sella Turcica and a tumour in the site of the Pituitary Body. The new growth is composed of two parts, each rather larger than a walnut, the one composed of hard nodulated bone, the other of a soft, homogeneous, brain-like material, containing numerous cysts, in the cavities of which are found the remains of broken-down epithelium and some calcareous debris.

The patient was a man aged 22, who had suffered from frequent fits for ten years before death. A microscopic examination shows that the softer part of the growth is composed of a stroma of connective tissue containing a very large number of small blood-vessels. In various parts of this stroma are ingrowths of epithelial cells, which show a great tendency to undergo cystic degeneration, thus forming the cysts seen in the specimen. The harder part of the tumour is not composed of true bone, but of the calcified stroma.

Microscopic sections are preserved, Nos. 104b and 104c, Series lv.

SERIES XXXIII.

DISEASES AND INJURIES OF THE EYE AND ITS APPENDAGES.

2613a. An Eyeball, part of which has become calcified. The sclerotic and cornea are normal, except that the latter is opaque; the choroid is sepa-

rated from the subjacent calcified tissue, and the retina may be seen within, completely detached in its whole circumference, adherent at the anterior extremity to the atrophied lens, and at its posterior extremity continuous with the optic nerve by a small hole in the bony capsule. The latter is incomplete in front, not extending beyond the ciliary region, and appears to occupy a position midway between the retina and choroid.

The patient was a man aged 67, who had lost the sight of his eye fifty years previously from an injury by a cow's horn.

2613b. A similar specimen to that last described.

From a man aged 40, whose eye had been partially destroyed by lime twenty-four years previously.

2613c. A similar specimen.

From a lady whose eyesight had been destroyed by an injury thirty years previously.

Presented by Henry Power, Esq.

SERIES XXXV.

DISEASES AND INJURIES OF THE SKIN AND ITS APPENDAGES.

2693a. A small Horn-like Growth removed from the skin of the lip. It consists of inspissated sebaceous material covered by hardened epithelium.

2702a. Epithelial Cast of a Foot in a case of scarlet fever.

Presented by Dr. Gibson.

2702b. A similar Cast of a Hand.

Presented by Dr. Gibson.

SERIES XXXVI.

DISEASES OF THE TESTICLE, ITS COVERINGS, AND OF THE SPERMATIC CORD.

2778a. Section of a Testis affected with tubercular disease. The gland is only slightly enlarged; the cut surface is firm and fibrous, but thickly dotted over with small caseous nodules; the tubules of the epididymis are filled with a similar material; the epididymis itself is not much enlarged. The cord is thickened, and the vas deferens has a diameter about three times as great as is natural. The tunica vaginalis is healthy.

From a man aged 52 years, who said that the tumour had followed a blow received twelve weeks previously. There was evidence of disease at the apices of the lungs, and

some family history of consumption. Microscopical examination discovered the presence of the giant cells and reticulum characteristic of tubercle, the tubules being blocked with epithelial debris.

Microscopical sections are preserved, No. 119b, Series lv. The other half of the testis is in the Museum of the Royal College of Surgeons.—See *Pitcairn Ward Book*, vol. viii. p. 118.

2797a. Cystic Sarcoma of the Testis. The place of the testis is occupied by a soft, brown tumour the size of an orange, the cut surface of which shows numerous small cysts, none larger than a split pea, and many of much less size. In one or two places there are small, white specks of cartilage. The epididymis is but little increased in size, though evidently diseased. The cord is healthy. Most of the tunica vaginalis is readily separable from the tumour.

From a man aged 30, who had noticed a swelling of the testis for about eighteen months. No cause could be assigned by the patient, who stated that the tumour had increased in size somewhat rapidly during the week before he came under notice. A microscopical examination shows that the bulk of the tumour is composed of fibrous tissue in various stages of development, some parts being very rich in cells, while in others nothing but fibres can be seen. The little cartilage that is present is of the variety commonly known as fibro-cartilage. The cysts appear to be formed by dilatation of the tubules of the testis, being lined for the most part by long, columnar epithelial cells, the length of which in the largest cysts is notably diminished.

Microscopic sections are preserved, No. 120a, Series lv.

Presented by F. Swinford Edwards, Esq.

SCIRRHOUS CANCER.

2804a. Section of a Testis infiltrated with a firm, white, dense tumour, occupying about equally the gland itself and the epididymis. The cord is much thickened and the tunica vaginalis adherent.

From a man aged 54, who had noticed a swelling of the testis for one year. A microscopical examination shows that the growth is a scirrhous cancer.

Microscopic sections are preserved, No. 122a, Series lv.

Presented by J. Macready, Esq.

SERIES XXXIX.

DISEASES OF THE PROSTATE GLAND.

2854a. A Bladder and Prostate. Occupying the whole of the latter is a large, soft sarcomatous tumour, parts of which project into the cavity of the bladder in the form of pedunculated growths of varying size. The bladder is somewhat hypertrophied.

From a man aged 21 years, who was admitted to the Royal Free Hospital for retention of urine. No tumour could at that time be felt per rectum, and his previous health had been good. He died in three weeks after much hæmaturia. A *post-mortem* examination showed greatly dilated ureters, with numerous small abscesses in the kidneys, but no secondary growths. On microscopical examination, the tumour was found to consist of round and spindle cells.—See description of case in the *Pathological Society's Transactions*, vol. xxxiv. p. 145.

Presented by Dr. Samuel West.

SERIES XL.

DISEASES AND INJURIES OF THE URETHRA AND PENIS.

2894a. Portion of a Penis. The upper part of the glans and the prepuce are covered by a warty, ulcerated growth of an epitheliomatous nature.

2894b. A similar specimen, but the amount of new growth is much greater than in the preceding preparation.

SERIES XLI.

DISEASES OF THE OVARIES.

2904b. The Uterus with the appendages. The left ovary is the seat of a simple cyst about the size of a large hen's egg.

BLOOD CYST IN OVARY.

2910a. The Uterus with the Right Ovary. The latter is occupied by a cyst the size of an egg, which, in the recent state, contained dark, fluid blood. The uterus is the seat of interstitial and subperitoneal fibroid tumours.

2922a. A Left Ovary and Fallopian Tube to which an enlarged Hydatid of Morgagni is attached. In the broad ligament is a cyst the size of a walnut, which contained a mass of sebaceous material.

2930c. The Uterus and part of the Abdominal Wall of a woman from whom the left ovary had been removed five years previously, the pedicle having been clamped outside the abdomen. The specimen shows a great elongation of the uterus, which was dragged up by the tension on the pedicle, so that its cavity measures $4\frac{1}{2}$ inches in length, that of the cervix being $2\frac{1}{2}$. A bristle had been passed along the left Fallopian tube into an opening in the abdominal wall, through which blood was discharged at the menstrual periods.

The patient died after an operation performed for a tumour of the right ovary.
Presented by A. Willett, Esq.

SERIES XLIII.

DISEASES OF THE UTERUS.

2944a. Section of an Uterus with a portion of the Bladder and Left Appendages attached. The uterus is in a position of acute anteflexion, so that

the fundus is in actual contact with the cervix and maintained in this situation by adhesions which pass between it and the bladder. The uterine cavity, which is of normal length, is roughened as if by ulceration, and greatly dilated above the internal os, which, however, is not contracted. The canal of the cervix presents a similar roughened appearance, but is not dilated. The bladder is empty and in a state of systole. The uterine appendages are matted together by adhesions the result of past perimetritis. The fimbriated extremity of the Fallopian tube where it is adherent to the ovary is dilated into a cyst, a bristle being passed into its orifice.

From a servant-girl aged 25 years, who died of acute abdominal obstruction. Her menstruation had been regular and painless, and her health good, with the exception of an attack of pelvic inflammation some years before death.

Presented by the Sussex County Hospital, in whose Museum is the other half of the specimen.

See description of case by Mr. W. J. A. Griffith in vol. xxv. of the *Obstetrical Society's Transactions*. A drawing is preserved, No. 516a, Series lvii.

2944b. An Anteflexed Uterus, from an old woman aged 63. The walls are very thin, and the whole organ much atrophied, though not diminished in length. The posterior surface is the seat of a subperitoneal fibroid as large as half an egg, while attached to the mucous membrane of the fundus uteri, close to the Fallopian tubes, are two small mucous polypi.

FIBRINOUS POLYPUS.

2976a. An Uterus enlarged to more than twice its natural size, and containing a large fibrinous polypus attached to the posterior wall over a surface measuring 2½ inches in length. The lower portion of the polypus lies free in the uterine cavity and extends through the internal os, at which point it has a well-marked constriction, to within half an inch of the external os. The polypus has been bisected vertically, and its external portion may be seen to be of a much paler colour than the more central part, which appears to consist chiefly of recent blood-clot.

From a woman aged 27, who had been a widow for six years, and had borne three children, the youngest of whom was two years and a half old. She stated that she was certainly not pregnant, that her catamenia had been absent for the past five months, and that for the week previous to her admission to the Hospital she had suffered from hæmorrhage from the vagina with bearing-down pains. For three months she had noticed swelling of the abdomen and had had frequent attacks of pain in the loins. When admitted, she was in a dying condition. A *post-mortem* showed that the cause of death was a large abscess in connection with a calculus impacted in the left ureter, the kidney on the same side having been converted into a large abscess-cavity. The rest of the viscera were normal.

A microscopical examination shows that the polypus consists entirely of clotted blood, the more external and decolorised parts of which are undergoing a process of organisation into a fibrillar structure, especially where the mass is in contact with the uterine wall or contained in the uterine sinuses. There is no trace of any fœtal or placental structure.

Microscopic sections are preserved, No. 130f; also a drawing, No. 514a.—For further particulars see account by Mr. Griffith in the *Transactions of the Obstetrical Society*, vol. xxv.; and *Martha Ward Book*, vol. viii. p. 34.

SERIES XLV.

DISEASES OF THE OVUM AND ITS MEMBRANES.

3058c. A specimen of early Abortion. The constriction of the cord and the hæmorrhagic bosses are very well shown.

Presented by Dr. Gibson.

3058d. Decidua from a married woman aged 23 years, who had suffered from menorrhagia for six months after missing one monthly period.

SERIES XLVI.

DISEASES AND INJURIES INCIDENTAL TO GESTATION AND PARTURITION.

3094a. The Uterus of a woman aged 36, who died four weeks after the birth of her ninth child from pyæmia. A portion of the placenta is adherent to the posterior wall of the uterus close to the fundus, while floating free in the cavity is another small shred.

SERIES XLVIII.

DISEASES OF THE MAMMARY GLAND.

3181b. Section of a Breast. The surface of the nipple is irregular, excoriated, and eczematous. It is deeply retracted below the level of the surrounding integument, and blends with a small, firm mass of scirrhous cancer, not larger than a walnut. The whole breast appears to have atrophied, for there is no trace of glandular structure, its place being taken by a quantity of fat.

The patient was a woman aged 49, who had suffered from eczema of the nipple for three years; the tumour in the breast had been noticed about twelve months. Two years after the operation there had been no return of the growth.

Microscopic sections are preserved, No. 147b.

Presented by W. C. Everley Taylor, Esq.

SERIES L.

GENERAL PATHOLOGY.

3318a. Melanotic Sarcoma on the tip of the middle finger.

From a woman aged 54 years, who said she had noticed what she called a corn on her middle finger for four years; it was always black, and had grown more rapidly for the

eighteen months previous to the time she came under notice. A small nodule the size of a pea of a similar nature was situated under the skin of the back of the hand, where she had noticed it one month. The axillary glands were enlarged. The patient died with disseminated growths ten months later.

On microscopical examination the growth was found to be composed of round and oval cells of a connective tissue type, amongst which granules of pigment were thickly scattered.

Microscopical sections are preserved, No. 572a ; also a drawing in series lvii., No. 573.

SUPPURATION OF MALIGNANT TUMOURS.

3335a. Part of a large Scirrhous Cancer of the Breast, in the centre of which is an irregular ragged abscess cavity, which in the recent state contained some foul-smelling but well-formed pus. There was no history of an injury to the diseased breast.

3335b. A Sarcomatous Tumour of the Testis, at the lower part of which is an abscess cavity, which contained about two ounces of healthy pus.

From a man aged 50. Some weeks before castration was performed the tumour had several times been punctured, under the impression that it was a hematocele.

3366a. A Cystic Tumour in connection with an enlarged and thickened vein. The cyst is about the size of a walnut, is covered by and adherent to the neighbouring skin, and contains some fine fibrinous material, which surrounds a central mass of softened pulpy matter. At the back of the cyst is about half an inch of thickened vein, a small orifice in which leads towards the tumour.

From a woman who said she had noticed the cyst for eighteen years. It lay in the course of the internal saphena vein.

3375a. A Congenital Tumour removed from the neck of a girl aged 19. It consists of a number of small cysts with smooth lining membrane, and of one large cyst of a similar nature. The latter contained a clear yellowish fluid ; the former, sebaceous matter and fluid.

SERIES LII.

URINARY CALCULI.

46a. Two oval flattened Calculi, of almost exactly the same size and shape, consisting of uric acid surrounded by a very thin layer of earthy phosphates. They show no trace of being facetted.

46b. A flattened Calculus composed almost entirely of uric acid.

59a. Sections of a Calculus. Nucleus uric acid and urate of ammonia surrounded by a thin layer of phosphate of lime. The next layer, which comprises the bulk of the calculus, is composed of oxalate of lime, the whole being surrounded by a layer of the triple phosphate.

CALCULI FROM THE URETER.

218a. An Irregular-shaped Calculus removed after death from the ureter. It is composed chiefly of phosphate and carbonate of lime.

From a woman aged 27. The kidney on the left side was dilated into a large cyst filled with pus, which caused death by rupturing into the peritoneum.

219a. Six Calculi of various sizes, removed from the prostate gland. The largest is as big as a nut, the smallest about the size of a pea; all are facetted. They are composed of about equal parts of phosphate and carbonate of lime.

Presented by A. Willett, Esq.

SERIES LV.

PATHOLOGICAL MICROSCOPIC SPECIMENS.

53c. Sections of Cartilage from a Joint affected with rheumatoid arthritis. The fibrillation of the cartilage matrix, its splitting into longitudinal striæ, and the multiplication of the cartilage cells are well shown.

53d. Section of a Loose Cartilage removed from the knee-joint. It is composed of fibrous tissue and cartilage which in parts has become calcified.

From Specimen No. 713a, Series ii.

53e. Section of a portion of Thickened Synovial Membrane removed from the knee-joint. It consists chiefly of ordinary synovial tissue mixed with the products of inflammation.

From Specimen No. 716a, Series ii.

53f. Section of a Loose Cartilage from the knee-joint composed of hyaline cartilage partially calcified.

57b. Section of a Cicatrix uniting a Tendo Achillis from which a portion of tendon had been resected.

From Specimen No. 1198a, Series vi.

67a. Section of a Papillary Growth removed from the trachea.

From Specimen No. 1656a, Series x.

73f. Section of a Pendulous Growth from the Nose, a so-called "Lipoma Nasi." It is composed mainly of enlarged sebaceous glands surrounded by fibrous tissue.

From Specimen No. 1760a, Series xii.

77b. Section of a Tongue which was the seat of a papillated new growth. The section shows an enlargement of the papillæ, a thickening of the

epithelium, and an ingrowth of the interpapillary processes. The latter have invaded the organ to such an extent as to form a distinct epitheliomatous growth containing numerous cell-nests.

From Specimen No. 1788a, Series xii.

78a. Section of a Tongue the seat of Chronic Glossitis and Epithelioma. Where not ulcerated the surface is perfectly smooth and non-papillated, the interpapillary processes being generally increased in length.

86a. Section of a Typhoid Ulcer of the Small Intestine before the separation of the slough.

87d. Section of a Rectal Polypus. It is composed entirely of loose fibrous tissue.

From Specimen No. 2064a, Series xix.

87e. Section of a Polypus of the Small Intestine. It consists of mixed glandular and fibrous tissue.

From Specimen No. 2191a, Series xx.

93a. Section of a Contracted Granular Kidney.

93b. Sections of a "Surgical Kidney," showing the dilatation of the tubules and growth of interstitial connective tissue that results from obstruction to the outflow of urine.

104b. Section of a Tumour of the Pituitary Body, composed of connective tissue with ingrowths of epithelial cells. In many places the cells have broken down and formed secondary cysts.

From Specimen No. 2504a, Series xxx.

104c. Section of another portion of the same Tumour from which the previous section was taken. It consists of trabeculæ of calcified tissue, entangled in the meshes of which are the remains of epithelial (?) cells.

112e. Section of a Chondro-Sarcoma of the Lachrymal Gland. It is composed of round and oval connective tissue cells, a little loose connective tissue, and some hyaline and fibro-cartilage.

113e. Section of a Molluscum Fibrosum Spot.

119b. Section of a Tubercular Testis. The tubules are filled with epithelial debris, and tubercular nodules are scattered through the section, some of them being in a caseous condition.

From Specimen No. 2778a, Series xxxvi.

120a. Section of a Chondro-Cystic-Sarcoma of the Testis, composed of connective tissue cells in all stages of development, and fibro-cartilage. The tubules of the testis are dilated into cysts, and their columnar epithelial cells greatly reduced in length.

From Specimen No. 2797a, Series xxxvi.

122a. Section of a Scirrhous Cancer of the Testis.

From Specimen No. 2804a, Series xxxvi.

130f. Section of a Fibrinous Polypus of the Uterus with the contiguous uterine wall. It consists of blood-clot and fibrin undergoing a process of organisation into a loose fibrillar structure.

From Specimen No. 3015a, Series xliii.

146e. Section of a Fibro-Sarcoma of the Mammary Gland. In some parts of the field portions of glandular tissue may be seen, and cysts lined with glandular epithelium.

146f. A similar specimen to the preceding.

160a. Section of a painful Subcutaneous Tumour. It consists entirely of fibrous tissue.

171a. Sections of a Rodent Ulcer of the Face. It differs from epithelioma chiefly in the small size of the epithelial cells which form the new growth, in the greater size of the ingrowing masses compared to the columns in epithelioma, and in the absence of cell-nests.

176a. Section of an Epithelioma of the Groin, showing unusually well the whorl-like arrangement of the cells.

176b. A Glandular Cancer of the Superior Maxilla, consisting in part of a carcinomatous growth, and in part of glandular tissue.

176c. Sections of a Melanotic Epithelioma.

Taken from No. 3318a, Series l.

182a. Crystals of Triple Phosphate from human urine.

185a, 185b, 185c. Various forms of Uric Acid Crystals from human urine.

Presented by H. L. Jones, Esq.

SERIES LVI.

CASTS AND MODELS OF DISEASED OR INJURED PARTS.

2c. The Pelvis and Lower Extremities of a child, presenting very severe rachitic deformities.

19a. Casts of Two Knees with severe Genu Valgum.

33b. Cast of a Foot and Leg exhibiting the deformity which has resulted from a badly-set Pott's fracture. The foot is displaced outwards and backwards.

35a. A Foot showing the result of a successful excision of the os calcis.

35b. A Hand exhibiting the failure of development which has resulted from the excision of the metacarpo-phalangeal joint of the middle finger.

68a. Casts of the Hands of a gouty man, exhibiting the condition known as "Dupuytren's contraction of the palmar fascia." In the right hand the middle and ring fingers are bent towards the palm; in the left, the ring and little fingers.

68b. A similar specimen to that last described, the little finger alone being affected.

71a. Casts of Two Knees from the same patient showing Enlarged Bursæ, the one situated over the patella, the other over the ligamentum patellæ.

72b. Casts of the Hands and Feet of a boy who suffered from morbus cordis. All the fingers and toes are clubbed.

85a. Two Casts of a Foot with Talipes Equino-varus, showing the improvement which resulted from excision of part of the tarsal arch.

85b. A Foot from which the astragalus had been excised for the cure of talipes equino-varus.

87b. Cast of the Foot and Leg of a girl aged 14 years, showing the deformity characteristic of talipes equino-varus; the muscles of the calf are much wasted.

The deformity was not congenital, but followed an attack of scarlet fever, and at first disappeared under the influence of an anæsthetic. The muscles had wasted during the year previous to this cast being taken, as may be seen by reference to Cast No. 87a, which shows the condition of the limb six weeks after the deformity first appeared.

87c. Cast of a Leg in a condition of spastic rigidity, the hamstring and calf muscles being especially contracted, though not at all atrophied.

From a man who had symptoms pointing to lateral sclerosis of the cord.

100a. Cast of an Ear which has become thickened and malformed by inclusion in a nævoid growth.

159a. Cast of a Foot with Eczema Verrucosa.

SERIES LVII.

DRAWINGS OF DISEASED OR INJURED PARTS.

5g. Two Photographs of a Woman aged 54 years, showing the deformity resulting from Osteitis Deformans.

5h. Four Photographs of a Man with Osteitis Deformans.

37a. Photograph of a Young Woman whose right Femur had been divided below the Trochanters on account of anchylosis of the hip. Free movement and a useful limb resulted from the operation.

75a. Synovial Cyst in the Groin in connection with rheumatic disease of the hip-joint.

129a. Teeth from a patient with Congenital Syphilis.

172c. Drawing of the Mouth and Pharynx of a girl aged 15 years, showing the result of Strumous Ulceration of the Soft Palate. There is considerable stenosis of the naso-pharynx, due to the retraction of the posterior palatine arches by adhesions.

172d. Drawing of a similar condition in a woman due to Syphilitic Ulceration. The only communication existing between the mouth and the naso-pharynx is by means of the small oval orifice seen in the sketch.

172e. Mouth of a Boy showing a similar constriction of the naso-pharyngeal aperture, the orifice in this case being no larger than a split pea and circular in shape.

172f. Laryngoscopic view of the patient from whom the last drawing was taken, showing an extremely minute valve-like aperture by which the cavity of the mouth communicated with the food and air passages.

178a. A Tongue, the left half of which is occupied by a warty papillated growth of five years' duration, considerably raised above the surface, but nowhere ulcerated. Microscopic examination showed that the disease was of an epitheliomatous nature.

The left half of the tongue is preserved in Series xii. No. 1788a, and microscopic sections in Series lv. No. 77b.

180a. A Tongue, the anterior half of which is excavated by gummatous ulceration.

189b. Recurrent Nævoid Growth on the upper lip.

190a. Mouth of a Gouty Patient, showing a prominent central incisor of the lower jaw—a so-called "buck-tooth"—protruding so as to be on a plane anterior to the remainder of the teeth.

191a. Face of a patient suffering from Chronic Lead-poisoning. The lips and gums show a deep blue stain.

197a. Head and Neck of a man, showing a fistulous opening which exposes the epiglottis, resulting from a cut-throat.

The opening was closed by operation.

244a. Chronic Dysenteric Ulceration of the large intestine.

The patient had suffered from dysentery for twenty years.

263a. Portion of Intestine showing the restoration of the canal after an

attack of intussusception and sloughing of the gut. The case is described and the specimen preserved in Series xx. No. 2191a.

283c. Extensive Rupture of the Liver.

From a man who received a blow on the right side of the abdomen, which was followed by continuous vomiting and other signs of injury to the intestine. No other lesion was discovered after death.—The case is described by Mr. E. Colville in vol. xviii. of *St. Bartholomew's Hospital Reports.*

322a. Advanced Tubercular Disease of the Kidney, Bladder, and Ureter.

406a. Sketch of a Woman showing a patch of Morphæa (Circumscribed Scleroderma) of the Neck, and Chronic Eczema of the Nipple.

406b. Photograph of a Child aged 5 years with Scleroderma of the left lower extremity.

Presented by T. Sympson, Esq.

406c. Morphæa of the Face and Scalp.

407c. Portrait of a Child with a large Hairy Mole on the cheek.

415a. Acute Erythema with Bullæ (Erythema Multiforme).

465a. Congenital "Lupus Lymphaticus" in the Axilla of a girl aged 17 years. The disease consists of small patches of raised vesicles containing a clear fluid, painful to the touch, and not tending to spread.

The case was shown by Dr. Dyce Duckworth at a meeting of the Dermatological Society in July 1883.

468a. Subcutaneous Rheumatic Nodules in the Ears and Knee.

See description by Dr. Dyce Duckworth in the *Transactions of the Clinical Society*, vol. xvi. p. 190.

468b. Subcutaneous Rheumatic Nodules in the Hand.

From the same patient as the preceding drawing.

484a. Displacement of the Left Testis into the Perinæum, with failure of development of the corresponding half of the scrotum.

514a. Drawing of an Uterus containing a Fibrinous Polypus.

The specimen from which the drawing was taken is preserved in Series xliii. No. 3015a.

516a. Acute Anteflexion of the Uterus.

The specimen from which the drawing was taken is preserved and described in Series xliii. No. 2944a.

535b. Ulceration of the Forearm, resulting from repeated morphia injections.

535c. Phagedænic, Warty, Perforating Ulceration of Labia and adjacent parts, of uncertain nature, but probably not venereal.

From a woman aged 26, who had first noticed some blebs on the vulva five months previously. She died with extension of the ulceration ten months after the first symptoms appeared. The mouth and tongue before death were the seat of a similar ulceration, and bullous eruptions appeared on the skin. (See Drawing 535d.)

For account of case see *Magdalen Ward Book*, vol. ix. p. 357.

535d. Hand with a Bullous Eruption which appeared at intervals on different parts of the body of the same patient from whom the previous sketch was taken.

545g. Primary Syphilitic Sore on the back of the hand.

554h, 554i. Drawings of a case of Diffuse Lipoma of the neck.

554k. Drawing of a similar case.

563a. Disseminated Recurrent Fibroid Tumours of the Groin.

From a man aged 47. The first tumour had begun to grow when the patient was 11 years old, and was removed at the age of 21. Recurrent growths were afterwards removed at the ages of 27, 32, and 36. The present tumours had commenced to grow at the age of 44.—See *Darker Ward Book*, vol. viii. p. 465.

573a. Melanotic Epithelioma of the Tip of the Middle Finger.

The finger was amputated, but the patient died ten months after the operation with a return of the disease in the axillary glands. The growth had been noticed for four years before the operation was performed. The finger is preserved in Series I., No. 3318a.

ANATOMICAL AND PHYSIOLOGICAL SPECIMENS.

A Hyoid Bone with its muscles cut short, so as to show their attachments.

Presented and dissected by C. B. Lockwood, Esq.

Longitudinal Section of a Tongue, Larynx, and Trachea.

Presented by C. B. Lockwood, Esq.

A similar specimen.

A Dissection of the Spermatic Cord, showing its constituent parts.

Presented and dissected by R. H. Combes, Esq.

SPECIMENS Illustrating the DEVELOPMENT of the GREAT OMENTUM and TRANSVERSE COLON.

No. 1.

Embryo 1.—Embryo about an inch long. The stomach is almost vertical, and attached to the posterior wall of the abdomen by a meso-gastrium. The meso-gastrium is fastened to the greater curve of the stomach. The intestines form a simple short loop of the same calibre throughout.

Embryos 2 and 3.—Embryos of the same size, about two inches long. In one embryo the small intestines have been torn off. The stomach is less vertical, and the great omentum can be seen as a delicate streak along the greater curve. The left and transverse portions of the colon are attached to the back of the abdomen by a considerable mesentery. The left colon is almost in the middle line of the body; the transverse colon is beneath the stomach, quite free, and separated from the great omentum by a wide

interval or fossa, the peritoneum which belongs to the under surface of the omentum being continuous with the peritoneum of the upper surface of the meso-colon. The small intestines occupy the right side of the abdomen, the large the left side and upper part. There is no right colon.

No. 2.

Two embryos about three inches long. The great omentum has increased in length, and the transverse colon is beneath it, attached to the posterior wall of the abdomen by a mesentery. There is no trace of any adhesion between the transverse meso-colon and the great omentum; but the fossa between them, seen in the preceding specimens, is not so deep.

No. 3.

Embryo 1, about four inches long. The fossa between the great omentum and transverse meso-colon has almost disappeared, but is still well marked towards the left. Owing to the disappearance of the fossa, the colon no longer has a mesentery when viewed from above, but is almost between the layers of the great omentum.

Embryo 2, five inches long. The fossa between the transverse meso-colon and the omentum has almost disappeared; there is still a trace of it towards the left end of the stomach. There is no transverse meso-colon, and the colon is between the layers of the great omentum. The cæcum has travelled farther round the abdomen, and there is a partial right colon.

Presented by C. B. Lockwood, Esq.

Dissection of an Earth-worm.

Two Skulls of Indian Bears.

Presented by Surgeon-Major Waghorn.

Skull of a Fox.

Skull of a Stoat.

Skull of Two Rats.

Skull of a Mole.

Skull of a Baboon.

The five preceding specimens were presented by H. S. A. Griffith, Esq.

An Ovum at about the third week. The chorion has been slit open and the amniotic bag turned out. The fœtus, about one-eighth of an inch in length, can be seen lying close to the chorion; the umbilical vesicle, not much larger than a millet-seed, occupies the most dependent portion of the amnion.

Presented by Dr. Gibson.

An Ovum at about the fifth week. The fœtus measures a quarter of an inch in length.

Presented by Dr. Gibson.

A Fœtus of about six weeks' growth in its membranes.

A Fœtus aged about seven weeks.

Presented by Dr. Gibson.

An Uterus ten days after delivery at term. A thickening of the wall of the fundus marks the site of the attachment of the placenta.

The Cotyledonous Placenta of a Sheep.

Presented by Dr. Gibson.

TERATOLOGICAL SERIES.

Female Twin Fœtuses united by the thoracic laminæ above the umbilicus, and by the sides of the head and neck. The faces are so fused that it appears as though only one was present. There is no median eye; but the right eye of the one fœtus and the left of the other are normal in position and appearance. The condition of the ears is similar to that of the eyes. The brain cavity is common, and a large part of the nervous matter appears to have been contained in a cyst at the junction between the occipital and parietal bones. The nasal septum is complete. The buccal cavity, with the tongue, is well developed, and forms a common mouth, in which is contained a mass of tissue which apparently represents the fused maxillary bones of the right side of one fœtus and the left of the other respectively. In this mass are tooth capsules, and attached to it in an inverted position is another tongue. There are two larynges, the larger being on the right and communicating with the two posterior lungs, the other being connected to the anterior pair. The thoracic cavity is common, and all four lungs well developed. Two hearts exist, one being immensely larger than the other and occupying an anterior position. It consists of six cavities, apparently three auricles and three ventricles. The septum between the normal right and left ventricles is incomplete, and the former also communicates with the additional ventricle, which is situated in the septum between the other two. One large trunk is the only vessel which is given off from the ventricles, with all three of which it communicates. From it are given off two aortas, one to each fœtus, and one pulmonary artery to the anterior pair of lungs. The division between the three auricles is incomplete. The other heart is situated between the posterior pair of lungs, and consists of two cavities, a large inferior vena cava and a vein from the thymus being the only vessels communicating with it.

The œsophagi and stomachs are separate, as are also the upper portions of the small intestines, the lower portions being joined and forming a single common tube, which subsequently bifurcates to form two cæca. The large intestines are separate. The livers are mainly fused into one large quadrilateral mass, there being in addition a small separate lobule. The rest of the abdominal viscera are normal.

Presented by E. J. Jenkins, Esq.

A Male "Cyclopian" Fœtus, showing the deformity resulting from arrested development of the anterior portion of the cranial axis. The single orbital cavity is situated immediately above the palate and the eyeballs are fused into a single mass. The proboscis, which projects above the median eye, consists of the naso-frontal process partially perforated by a single nostril. The ethmoid bone is absent. The fœtus is otherwise well formed.

The mother had borne nine other healthy children.

Brain of the Fœtus last described. It is greatly malformed. The corpus callosum and the fornix are absent, the cerebral lobes are small and fused anteriorly, and the third and lateral ventricles are opened out into a large cyst.

A Siren Fœtus. The lower extremities are contained in a single sheath of integument. The ossa calcium are fused together, but the bones of the legs and thighs are separate. The femora are in a position of external rotation, so that their anterior surfaces look outward, and are articulated with the innominate bones at a point considerably behind the normal position of the acetabulum. In consequence of this, complete extension of the lower extremities on the pelvis is not possible, and this movement is therefore supplemented by preternatural mobility at the junction of the lumbar vertebræ with each other and with the sacrum. There is no anus, the rectum ending in a pouch filled with meconium. The place of the external genitals is taken by a small papilla of integument, while inside the abdomen are a pair of normal testes. The other viscera were natural, the kidneys and bladder being present.

Presented by Dr. David Davies.

A Siren Fœtus. The femora are fused into a single bone which articulates above with an imperfectly formed os innominatum. The fused femora are completely rotated on their vertical axes, so that the single patella is found on the posterior surface of the stunted lower extremity. The bones of the legs and feet are represented by a small lump of cartilage at the tip of which is a minute papillary projection indicating an attempt at the formation of the digits. There are no external or internal genital organs, and the kidneys are absent. The bones of the right upper extremity are normal, but on the left side the radius and the thumb are absent.

The mother was aged 26 years, had borne one other healthy child, and said she had had a sudden fright six months before parturition.

The Body of an Infant born at term, showing a diaphragmatic hernia on the left side, the greater part of the intestines being in the pleural cavity.

A Lumbo-Sacral Spina Bifida. The sac contains the termination of the spinal cord and many large nerve trunks.

Presented by Dr. Gibson.

The Lower Portion of the Spine of a child. The laminæ of the last lumbar and of the sacral vertebræ are deficient, and a considerable protrusion of the spinal membranes has occurred at this spot. The sac thus formed contains the termination of the spinal cord, which, together with many large nerve roots, is adherent to the inner surface of the sac. The lining membrane of the latter is stained with iodine. Situated on the posterior surface of the spina bifida is a coccygeal cyst, the walls of which have become partially adherent to each other, so that there was not more than two drachms of fluid in the cavity. A bristle is passed through an opening by which the two cysts communicate, but which was found blocked up by recent adhesions.

From a child aged 8 months, the subject of a large sacral cyst which was thought to be a spina bifida. On October 11, ten ounces of fluid were drawn off by a trocar, and half a drachm of "Morton's fluid" injected. On November 10 the swelling was found much decreased in size; was again tapped and reinjected with the same solution. On January 1 three ounces of fluid were drawn off, and a drachm of "Morton's fluid" injected. The child immediately became very livid, and died comatose in a few hours. It is most probable that in the first two operations the sacral cyst only, and not the spina bifida, was injected.

A two months' Fœtus. Immediately above the right knee the thigh presents a marked constriction, as though a tight band had encircled it in this situation.

Presented by Dr. Matthews Duncan.

An Astragalus removed by operation from a foot affected with talipes equino-varus. The anterior portion of the bone is smaller than natural, and the head is turned, so that its articulating surface for the scaphoid looks almost directly inwards.

A cast of the foot after the operation is preserved in Series lvi., No. 85b.

A Right Auricle partly divided into two cavities by a fold of the endocardium.

A Heart exhibiting an imperfection of the ventricular septum, the aorta and pulmonary artery both arising from the right ventricle; the deficiency of the septum is at the base, and will allow the passage of the tip of the index-finger. The walls of the left ventricle are thicker than those of the right, but its cavity is much less capacious. The aorta arises entirely from the right ventricle, and was otherwise natural. The coronary arteries, one of which is much smaller than the other, arise close together behind the same valve. The orifice of the pulmonary artery is situated in the septum ventriculorum, being partly occluded and subdivided by a large columna carnea which crosses it obliquely. The lower of the two openings thus formed, which is also the larger, presents signs of old endocarditis, and from it a probe can be passed downwards, behind some columnæ carneæ, as far as the apex of the heart, apparently almost in the substance of the septum. A partial adhesion seems to have occurred between the cusps of the pulmonary valves, so that the orifice of the artery will barely admit the tip of the little finger. This condition, combined with the peculiar mode of origin of the artery, must have

offered considerable obstruction to the pulmonary circulation. The calibre of the pulmonary artery itself is but slightly diminished. The auricles communicate by a partly closed foramen ovale; the right auricle is the larger. The ductus arteriosus was not pervious. The heart weighs $8\frac{1}{2}$ ounces.

The specimen was taken from a boy aged 8 years, who died of typhoid fever. His mother stated that whenever he had a cold he became very blue, but that at other times this was not the case. On admission he was very cyanosed; the apex-beat of the heart was in the fifth intercostal space immediately in the nipple-line; the area of dulness was natural, and a soft, blowing, systolic murmur could be heard, being most clearly marked at the apex. The fingers and toes were much clubbed.

A Rectum of a child with Imperforate Anus. The mucous membrane of the lowest part of the bowel has been peeled up, in the form of a *cul de sac*, to the extent of about an inch and a half, whilst higher up are small blood extravasations in the submucous tissue. At the place where the separation of the mucous membrane stops, is a circular aperture (in which is placed a piece of catheter) communicating with the peritoneal cavity. A bristle is passed into a very minute hole in the pouch of mucous membrane, through which the cavity of the gut communicated with the anal aperture.

From a child aged 4 days. Previous to admission into the Hospital, a surgeon had attempted to pass his finger into the rectum, and it would appear that in so doing he had peeled up the mucous membrane as seen in the specimen, for, on passing the finger into the anus, it entered a capacious pouch which did not apparently communicate with the bowel. The hole in the rectal wall was caused by an attempt to relieve the obstruction by the passage of a catheter.—See *President Ward Book*, vol. ix. p. 234.

A very Large Kidney, weighing 13 ounces.

Removed from a man who died of morbus cordis. The other kidney was absent; a small mass of connective tissue and fat being in its place.

A microscopic examination showed that the enlarged kidney is the seat of chronic nephritis.

CASTS OF TERATOLOGICAL SPECIMENS.

The Feet and Hands of a girl aged 11 years, exhibiting a very irregular hypertrophy of some of the digits. In the right foot, the middle toe is enlarged; in the left, the second toe. In the left hand, the thumb is slightly hypertrophied; in the right, the middle finger is considerably elongated.

No history of similar deformities in any of the patient's relations could be obtained.

Cast of a Hand, the Middle and Ring Fingers of which are not more than half the size of the other digits.

Presented by A. Willett, Esq.

Cast of the Right Hand of a girl aged 9 years. In the place of the thumb are two small digits, each capable of independent movement, and articulating with the first metacarpal bone.

Cast of a Foot, the second toe of which is greatly hypertrophied.

Cast of a Foot, the middle toe of which is hypertrophied.

EXAMINATIONS, 1880-81.

Lawrence Scholarship and Gold Medal—
Not awarded.

Brackenbury Medical Scholarship—
G. F. Barnes.

Brackenbury Surgical Scholarship—
J. Harper.

Senior Scholarship in Anatomy, Physiology, and Chemistry—
T. W. Shore.

Junior Scholarships.
1. G. L. Wells.
2. A. G. Garrod.
3. S. H. Habershon.

Open Scholarships in Science—
J. Nall.
H. C. Chapman, S. K. Alcock, } Equal.

Preliminary Scientific Exhibition—
G. L. Wells.

Jeaffreson Exhibition—
R. Wrigley.

Kirkes Gold Medal—
W. P. Herringham.

Bentley Prize—
J. Berry.

Hichens Prize—
R. Orr.

Prox. accessit.—A. Shadwell.

Wix Prize—
J. R. Forrest.

Harvey Prize—
1. E. C. Pettifer.
2. A. M. Page.
3. E. J. Cave.
4. E. A. Opie. J. F. Steedman.
6. A. Gresswell.
7. E. W. Willett.

PRACTICAL ANATOMY.

Senior.

Foster Prize—A. E. Hind.
2. H. C. C. Shaw.
3. J. F. Steedman.
4. J. N. Vogan.
5. E. J. Cave. R. De Morini.
7. C. O'B. Harding. A. M. Page.

Junior.

Treasurer's Prize—J. C. Heath.
2. H. W. Chambers.
3. H. C. Chapman.
4. J. P. Fenoulhet. E. Jessop.
6. N. W. Woods.
7. C. H. Upham.
8. G. P. Newbolt.
9. C. Kebbell.
10. J. Gay.

EXAMINATIONS, 1881-82.

Lawrence Scholarship and Gold Medal—
R. J. Collyns.

Brackenbury Medical Scholarship—
C. A. Morton.
T. W. Shore.

Brackenbury Surgical Scholarship—
R. J. Collyns.

Senior Scholarship in Anatomy, Physiology, and Chemistry—
E. C. Pettifer.

Junior Scholarships—
1. W. G. Spencer.
2. J. Gow.
3. H. D. Rolleston.

Open Scholarships in Science—
J. Elliott.
E. C. Stoker.

Preliminary Scientific Exhibition—
H. W. Gardner.
F. N. Brown.

Jeaffreson Exhibition—
E. O. Fountain.

Kirkes Gold Medal—
R. J. Collyns.

Bentley Prize—
R. J. Collyns.
R. D. Batten.

Hichens Prize—
C. B. Innes.

Wix Prize—
J. Robinson.

Harvey Prize—

1. H. C. Chapman.
2. J. Gay.
3. G. L. Wells.
4. H. H. Fisher.
5. S. K. Allcock. / O. Wunderlich.
7. G. P. Newbolt.

PRACTICAL ANATOMY.

Senior.

Foster Prize—J. C. Heath.
2. S. H. Habershon.
3. F. E. Matthews.
4. E. Jessop.
5. H. C. Chapman.
6. O. R. Julian.
7. S. J. Palmer.
8. F. P. Maynard.
9. J. P. Roughton.

Junior.

Treasurer's Prize—E. Humphry.
2. T. M. Wright.
3. R. H. Coombes.
4. T. W. Duff.
5. R. F. Jowers.
6. J. Soutter.
7. L. P. Shadbolt. / B. Furnivall.
9. H. W. Gardner.
10. H. D. Rolleston.
11. R. Barbery.

EXAMINATIONS, 1882-83.

Lawrence Scholarship and Gold Medal—
T. W. Shore.
S. Paget.
T. N. Vogan.

Brackenbury Medical Scholarship—
F. Cresswell.

Brackenbury Surgical Scholarship—
J. Berry.

Senior Scholarship in Anatomy, Physiology, and Chemistry—
G. L. Wells.

Open Scholarships in Science—
F. W. Andrewes.
W. S. Whitcombe.

Preliminary Scientific Exhibition—
Æq. { A. W. Laing.
C. H. Hands.

Jeaffreson Exhibition—
C. S. Pethick.

Kirkes Gold Medal—
F. Cresswell.
S. Paget.

Bentley Prize—
{S. H. Habershon.
{W. T. H. Spicer.

Hichens Prize—
W. G. Spencer.

Wix Prize—
H. W. Gell.

Harvey Prize—

1. H. D. Rolleston.
2. F. M. Wright.
3. W. G. Spencer.
4. C. W. F. Young.
5. W. J. Gow.
6. J. Soutter.
7. F. S. Barber.
8. J. J. G. Pritchard.

PRACTICAL ANATOMY.

Junior.

Treasurer's Prize—F. W. Green.
2. F. W. Andrewes.
3. F. S. Arnold.
4. M. C. Moxham.
5. W. H. Hamer.
6. O. C. P. Evans.
7. W. H. R. Rivers.
8. J. Nixon.
9. H. C. L. Scofield.

Senior.

Foster Prize—F. M. Wright.
2. E. Humphry.
3. W. G. Spencer.
4. H. D. Rolleston.
5. J. W. Cockerill.
6. R. H. Combes.
7. R. F. Jowers.
8. { A. H. Davis.
9. { J. J. G. Pritchard.
10. A. C. Dove.
11. { W. J. Gow.
12. { J. A. Rigge.
13. L. M. Snow.

ST. BARTHOLOMEW'S HOSPITAL & COLLEGE.

THE MEDICAL AND SURGICAL STAFF.

Consulting Physicians—Sir G. Burrows, Bart., D.C.L., F.R.S., Dr. Farre, Dr. Martin, Dr. Harris.

Consulting Surgeons—Sir J. Paget, Bart., D.C.L., LL.D., F.R.S., Mr. Luther Holden.

Physicians—Dr. Andrew, Dr. Church, Dr. Gee, Dr. Duckworth.

Surgeons—Mr. Savory, F.R.S., Mr. Thomas Smith, Mr. Willett, Mr. Langton, Mr. Morrant Baker.

Assistant-Physicians—Dr. Hensley, Dr. Brunton, F.R.S., Dr. Wickham Legg, Dr. Norman Moore.

Assistant-Surgeons—Mr. Marsh, Mr. Butlin, Mr. Walsham, Mr. Cripps, Mr. Bruce Clarke.

Physician-Accoucheur—Dr. J. Matthews Duncan.

Assistant-Physician-Accoucheur—Dr. Godson.

Ophthalmic Surgeons—Mr. Power, Mr. Vernon.

Dental Surgeon—Mr. Coleman.

Assistant-Dental Surgeons—Mr. Lyons, Mr. Ewbank.

Aural Surgeon—Mr. Cumberbatch.

Administrator of Chloroform—Mr. Mills.

Casualty Physicians—Dr. King, Dr. Herringham, Dr. Steavenson.

Medical Registrar—Dr. S. West.

Surgical Registrars—Mr. Macready, Mr. Eve.

Electrician—Dr. Steavenson.

LECTURES.

Medicine—Dr. Andrew, Dr. Gee.

Clinical Medicine—Dr. Andrew, Dr. Church, Dr. Gee, Dr. Duckworth.

Surgery—Mr. Savory, F.R.S.

Clinical Surgery—Mr. Savory, F.R.S., Mr. Thomas Smith, Mr. Willett, Mr. Langton, Mr. Baker.

Descriptive and Surgical Anatomy — Mr. Langton, Mr. Marsh.

General Anatomy and Physiology—Mr. Morrant Baker.

Histology—Dr. Klein, F.R.S.

Chemistry and Practical Chemistry—Dr. Russell, F.R.S.

Materia Medica—Dr. Brunton, F.R.S.

Forensic Medicine—

Public Health—Dr. Thorne Thorne.

Midwifery and the Diseases of Women and Children—Dr. Matthews Duncan.

Botany—Rev. George Henslow.

Pathological Anatomy—Dr. Wickham Legg.

Comparative Anatomy—Dr. Moore.

Ophthalmic Medicine and Surgery—Mr. Power.

Dental Anatomy and Surgery—Mr. Coleman.

Mental Diseases—Dr. Claye Shaw.

DEMONSTRATIONS.

Morbid Anatomy—Dr. Moore.
Diseases of the Skin—Dr. Wickham Legg.
Diseases of the Ear—Mr. Cumberbatch.
Diseases of the Eye—Mr. Vernon.
Diseases of the Larynx—Mr. Butlin.
Orthopædic Surgery—Mr. Walsham.
Practical Surgery—Mr. Butlin, Mr. Walsham.
Practical Anatomy and Operative Surgery—Mr. Bruce Clarke, Mr. F. Swinford Edwards, Mr. C. B. Lockwood.
Assistant-Demonstrators—Mr. Jessop, Dr. D. A. King.
Mechanical and Natural Philosophy—Mr. F. Womack.
Practical Physiology—Dr. V. D. Harris.
Assistant-Demonstrators—Dr. Ormerod, Dr. Tooth.
Chemistry—Dr. Armstrong.
Medical Tutor—Dr. S. West.
Assistant-Medical-Tutor—Dr. P. Kidd.
Tutor in Midwifery—Mr. W. S. A. Griffith.
Curator of the Museum—Mr. Bowlby.

COLLEGIATE ESTABLISHMENT.

Warden—Dr. Norman Moore.

Students can reside within the Hospital walls, subject to the College regulations.

Ten Scholarships, varying in value from £20 to £130, are awarded annually.

Further information respecting Scholarships, Pupils' Appointments, and other details, may be obtained from Dr. Norman Moore, and at the Museum or Library.

INDEX.

ST. BARTHOLOMEW'S HOSPITAL REPORTS.

VOLUME XIX.

INDEX.

Abernethian Society's proceedings, 355.
Abscess consequent on impaction of artificial teeth, 51.
Abscesses in brain and liver, 309.
Albuminous substances, precipitants of, 73.
Amsterdam, congress at, 99.
Anæmia with continued pyrexia, 311.
,, enteritis, 311.
,, ulceration of epiglottis, 311.
Anasarca without renal disease, 326.
Anus, passage of hydatids through, 315.

Baker, Mr., on the treatment of delirium with insomnia, 249.
Blood-poisoning as a cause of tetanus, 94.
Bowlby, Mr., on tetanus, 85.
Brain, abscess in, 309.
Brinton, Mr., on a case of ruptured diaphragm, 285.
,, on pyæmia with suppurative pericarditis, 271.
,, and Collyns, Mr., notes on a case of pyæmia with suppurative pericarditis, 271.
Brunton, Dr., address to the Abernethian Society, 355.
,, on the pathology and treatment of some forms of headache, 329.
Bullar, Mr., on the percussion of the lungs and chest, 211.
Butlin, Mr., on the department for diseases of the throat, 289.

Campbell, Mr., on reason and instinct in relation to medicine, 371.
Cancer of uterus and ovaries, two cases of, 111, 115.
Carter, Dr., case of extra-uterine fœtation, 29.
Cartilage, loose, in knee-joint, 208, 209.
Case of amyotrophic lateral sclerosis, 343.
,, anæmia and continued pyrexia with enteritis, and ulceration of epiglottis, 311.

Case of congenital pemphigus, 197.
„ pneumonia and pyæmia, with abscesses in the brain and liver, 309.
„ primary malignant disease of lung, 227.
„ pyæmia from impaction of false teeth in pharynx, 51.
„ suppurative pericarditis, 271.
Cases of cancer of uterus and ovaries, 111, 115.
„ extra-uterine fœtation, 27, 29.
„ numbness and paresis of hands, 17.
„ ocular motor paralysis, 277.
„ œsophagotomy, 72.
„ pernicious vomiting of pregnancy, 123, 125.
„ retroversion of gravid uterus, 297.
Chest and lungs, percussion of, 211.
Chloride of sodium, purpura produced by, 178.
Chronic ear-disease, 221.
Church, Dr., a case of pyæmia consequent on an abscess formed after impaction of a set of false teeth in the pharynx, 51.
Clarke, Mr. Ernest, on congenital abnormalities, 369.
„ Oscar, on some forms of puerperal fever, 359.
Collins, Dr., cases of ocular motor paralysis, 277.
„ notes of a case of pernicious vomiting of pregnancy, 123.
Collyns, Mr., notes on a case of anæmia and continued pyrexia, with enteritis and ulceration of the epiglottis, 311.
„ notes on a case of pneumonia and pyæmia, with abscesses in the brain and liver, 309.
„ on a case of amyotrophic lateral sclerosis, with microscopical examination of the nerve centres, &c., 343.
„ on pyæmia with suppurative pericarditis, 271.
„ on the study of nervous diseases, 366.
„ and Brinton, Mr., notes on a case of pyæmia with suppurative pericarditis, 271.
Colon, abnormality of, 255.
Colonial medical congress, 99.
Colotomy, unsuccessful, owing to abnormality of colon, 255.
Colville, Mr., cases from Mr. Willett's wards, 203.
Congress, international colonial medical, 99.
Constipation in retroversion of uterus, 308.

Davy, Mr., on sociology and disease, 357.
Delirium with insomnia, treatment of, 249.
Diaphragm ruptured, a case of, 283.
Dropsy, scarlatinal, without albuminuria, 321.
Duckworth, Dr., notes on the proceedings of the International Colonial Medical Congress at Amsterdam in 1883, 99.
„ on scarlatinal dropsy without albuminuria, 321.
Duncan, Dr., cases of extra-uterine fœtation, 27.
„ pernicious vomiting of pregnancy, 121.

Electrical department, report from, 235.
Electricity in drop-wrist, 244.
„ Duchenne's paralysis, 246.
„ enuresis, 245.
„ extra-uterine fœtation, 39.
„ facial paralysis, 243, 246.
„ hysteria, 243.
„ infantile paralysis, 245.
„ lead palsy, 243.
„ loss of power in arms, 244.
„ paralysis from division of nerves, 246.
„ sciatica, 247.
„ tic douloureux, 247.
„ on a dead fœtus, experiments with, 42.
Enteritis with anæmia, 311.
Epilepsy, cause of, 130.
„ „ death in, 136.
„ condition of parts discovered, 134.
duration of, 131.
indications calling for trephining, 133.
result of operation in, 136.
„ skull in, 127.
„ statistics of, 144.
„ summary of, 138.
Epithelioma of uterus and ovaries, two cases of, 111, 115.
Erythema connected with purpura, 182.
Experiment of electrolysis on fœtus, 42.
Extirpation of uterus and ovaries, 111.
Extra-uterine fœtation, cases of, 27.
Eyes, condition of, in headache, 336.

Fits in chronic ear-disease, 221.
„ granular kidney, 221.
Fœtus, effects of electrolysis on, 39.

Gee, Dr., an anecdote of Sydenham, 1.
„ on passage of hydatid membrane per anum, 318.
Granular kidney, epistaxis in, 225.
„ „ præcordial pain in, 225.
Griffith, Mr., a new scheme for the classification of deformed pelves, 266.

Habershon, Mr., on theories of vision, 357.
Hands, numbness and paresis of, 17.
Harper, Mr., on erysipelas, 368.
Harris, Dr., on the precipitants of albuminous substances in the urine, 73.
Headache, condition of eyes in, 336.

Headache, from decayed teeth, 331.
„ in albuminuria, 340.
„ „ chronic ear-disease, 221, 224.
„ „ granular kidney, 221, 224.
„ „ syphilis, 340.
„ its factors, 340.
„ locality of, 341.
„ of anæmia, 339.
„ „ fever, 339.
„ „ plethora, 339.
„ pathology and treatment of, 329.
„ rheumatic, 339.
„ with constipation, 338.
„ „ indigestion, 339.
„ without constipation, 338.
Howe, Mr., on nerve-stretching, 364.
Hurry, Mr., fifteen cases of retroversion of the gravid uterus, 297.
Hydatids of the liver, 315.

Icterus gravis, purpura in, 179.
Incontinence of urine, electricity in, 245.
Insane, criminal responsibility in, 5.
Insomnia with delirium, treatment of, 249.
Intestines, passage of foreign bodies through, 51, 69.
Irido-plegia, 284.

Jessop, Mr., a blow on the eye by a blunt instrument and its consequences, 375.
Jones, Mr. Lewis, hydatids of the liver with passage of hydatid membrane per anum, 315.

Kidd, Dr., a case of primary malignant disease of the lung, 227.
Kidney, granular, two cases of, 221.
„ „ variations of arterial tension in, 224.
King, Dr., on dyspepsia, 377.
Knee, diseases of, 376.
„ joint, cases of disease of, 206.
„ „ loose cartilage in, 208, 209.
Knife in the post-pharyngeal tissue, 45.

Larynx, cases from the department for diseases of, 289.
Legg, Dr., a case of rheumatic purpura, with notes, 177.
„ „ cases of congenital pemphigus persistent from birth, 195.
Leucæmia a cause of purpura, 181.
Liver, abscesses in, 309.
„ hydatids of, 315.
„ ruptured with unusual symptoms, 203.

Lockwood, Mr., on a necessary reform in out-patient practice, 356.
„ „ on abnormalities of the colon as a cause of unsuccessful colotomy, 225.
Lung, primary malignant disease of, 227.
„ „ „ „ microscopy of, 232.
Lungs and chest, percussion of, 211.
„ „ resonance of, 215.

Mason, Mr., cases of extra-uterine fœtation, 27.
„ „ on extirpation of the uterus and ovaries, 111.
Megrim and abnormalities of vision, 327.
„ condition of vessels in, 333.
Monas hæmorrhagicum, 177.

Nasal mucous polypus, 290.
Nephritic purpura, 179.
Numbness and paresis of hands, 17.

Œsophagotomy, cases of, 72.
„ success of, 66.
Ophthalmoplegia interna, 283, 284.
Optic neuritis in chronic ear-disease, 221.
„ „ in granular kidney, 221.
Ormerod, Dr., on a peculiar numbness and paresis of the hands, 17.
Ovaries and uterus, extirpation of, 111.

Papilloma of the trachea, continuation of case of, 290.
Paralysis, cases of ocular motor, 277.
„ Duchenne's, electricity in, 246.
„ from division of nerves, electricity in, 246.
„ of fourth and sixth nerves, 280.
„ symmetrical, of ocular muscles, 278, 279.
Paresis of hands, 17.
Pathology of headache, 329.
Peliosis rheumatica, 181, 194.
Pelves, deformed, description of, 264.
„ non-rachitic, 268.
„ rachitic, 268.
Pemphigus, congenital, 197.
Percussion of lungs and chest, 211.
Pericarditis, suppurative, 271.
Pharynx, impaction of false teeth in, 51.
Pneumonia with pyæmia, 309.
Polypi, nasal, mucous, situation of growth of, 291.
„ „ „ structure of, 292.
„ „ „ treatment of, 290, 294.
Polyuria in retroversion of the uterus, 307.
Precipitants of albuminous substances in the urine, 73.

Pregnancy, extra-uterine, 27.
„ pernicious vomiting of, 121.
Proceedings of the Abernethian Society, 355.
Purpura, connection with erythema, 182.
„ definition of, 177.
„ due to congestion, 180.
„ histological pathology of, 182.
„ idiopathic, 182.
„ in ague, &c., 180.
„ „ chronic nephritis, 179.
„ „ eruptive diseases, 177.
„ „ icterus, 179.
„ „ leucæmia, &c., 181.
„ „ splenic enlargement, 181.
„ monas hæmorrhagicum in, 177.
„ produced by chloride of sodium, 178.
„ rheumatica, 177.
„ rheumatica, case of, 186.
„ toxic, 178.
„ with sarcoma, 181.
Pyæmia with anæmia, 311.
„ „ enteritis, 311.
„ „ pneumonia, 309.
„ „ suppurative pericarditis, 271.
„ „ ulceration of epiglottis, 311.

Renal disease without anasarca, 326.
Responsibility, criminal, in the insane, 5.
Retroversion of the gravid uterus, 297.
Rheumatic fever, 365.
„ purpura, 177.

Scheme for classification of deformed pelves, 264.
Sciatica, electricity in, 247.
Sclerosis amyotrophic lateral, 343.
„ „ „ condition of muscles in, 346, 349.
„ „ „ medulla oblongata in, 351.
„ „ „ pons in, 351.
„ „ „ spinal cord in, 349.
„ „ „ treatment of, 348.
Shaw, Dr. Claye, on criminal responsibility in the insane, 5.
Shore, Mr., on Bright's disease, 369.
Skull, trephining of, in traumatic epilepsy, 127.
Smith, Mr. Montagu, on hydrophobia, 360.
„ „ Thomas, a case in which a pocket-knife remained for seven months in the post-pharyngeal tissue, 45.
Sodium chloride, production of purpura by, 178.
Sore throat a cause of headache, 336.

Spleen enlarged in purpura, 181.
Steavenson, Dr., note on electricity in extra-uterine fœtation, 39.
„ on diphtheria, 369.
„ the electrical department, report of, 235.
Stomach, foreign bodies in, 68.
„ „ remarks on their passage through, 51.
Sydenham, an anecdote of, 1.
Synovitis of knee-joint, drainage in, 206.

Teeth, artificial impaction of, in the pharynx, 51.
„ decayed, a cause of headache, 331.
Tetanus, cases of, 85.
„ causation of, 89.
„ due to blood-poisoning, 94.
„ post-mortem appearances in, 96.
„ similarity between hydrophobia and, 97.
Tic-douloureux, electricity in, 247.
Tracheal papilloma, continuation of case of, 290.
Trephining the skull in traumatic epilepsy, 127.

Ulceration of the epiglottis with anæmia, 311.
„ „ „ enteritis, 311.
„ „ „ pyrexia, 311.
Urine in pernicious vomiting of pregnancy, 125.
„ precipitants of albuminous substances in, 73.
„ retention of, in retroversion of gravid uterus, 307.
Uterus and ovaries, extirpation of, 111.
„ gravid, retroversion of, 297.

Vision, abnormality of, in megrim, 337.
Vomiting in chronic ear-disease, 221.
„ in granular kidney, 221.
„ pernicious, in pregnancy, 121.

Walsham, Mr., on trephining the skull in traumatic epilepsy, 127.
West, Dr., granular kidney or intercranial disease?—two cases of headache, vomiting, fits, and double optic neuritis, associated with chronic ear-disease, but due to granular kidney, 221.
Willett, Mr., cases, 203.
„ remarks on extirpation of uterus and ovaries, 118.
Womack, Mr., on Ferrier's centres, 365.

PRINTED BY BALLANTYNE, HANSON AND CO.
EDINBURGH AND LONDON.



STATISTICAL TABLES

OF THE

Patients under Treatment

IN THE WARDS OF

ST. BARTHOLOMEW'S HOSPITAL

DURING 1882.

BY

THE MEDICAL REGISTRAR,

SAMUEL WEST, M.B. (Oxon.)—M.R.C.P.;

AND

THE SURGICAL REGISTRARS,

J. MACREADY, F.R.C.S.

AND

FREDERICK S. EVE, F.R.C.S.

LONDON:

HARRISON AND SONS, ST. MARTIN'S LANE,

Printers in Ordinary to Her Majesty.

1883.

PREFACE.

The Classification of Diseases in the Medical Tables is that adopted by the College of Physicians in their Nomenclature of Diseases.

CONTENTS.

PAGE

PREFACE iii

Number of Beds vii

General Statement of the Patients under Treatment during the Year vii

Patients brought in Dead vii

Number of Post-mortem Examinations vii

Occupations of the Male Patients viii

Occupations of the Female Patients ix

MEDICAL REPORT—

TABLE I.—Showing the Total Number of Cases of each Disease under Treatment during the Year 1882, with the Results 12

Abstract of Table I 32

Appendix to Table I 33

SURGICAL REPORT—

PAGE

TABLE I.—Showing the Total Number of Cases under Treatment during the Year 1882, with the comparative frequency and mortality of each Disease at different ages . . . 42

Abstract of Table I 68

Appendix to Table I 69

Table showing the Surgical Operations performed . . . 78

Statistics of Anæsthetics 86

Appendix to Table of Surgical Operations performed . . 87

Sub-Table, showing the Number of Cases of Erysipelas, Pyæmia, &c. 90

Appendix to the Sub-Table of Erysipelas, Pyæmia, &c. . . 92

Table of Amputations, with the Percentage of Deaths during the Ten Years from 1873 to 1882 inclusive . . 93

ST. BARTHOLOMEW'S HOSPITAL.

1882.

Number of Beds in Medical Wards (including 14 for Diseases of Women)	236
„ „ „ Surgical „ {including 6 for Diseases of Women and 26 for Ophthalmic Cases}	395
„ „ „ Unassigned	41
	672

GENERAL STATEMENT OF THE PATIENTS UNDER TREATMENT DURING THE YEAR.

Patients remaining January 1st, 1882 :				
Medical	237			
Surgical	358	595		
Admitted during the year 1882 :			....	7,383
Medical	2,712			
Surgical	4,076	 6,788		
Discharged :				
Medical	2,302			
Surgical	3,892	 6,194		
Died :				
Medical	389			
Surgical	212	 601	....	7,383
Remaining January 1st, 1883 :				
Medical	237			
Surgical	351	 588		
Patients brought in Dead		32		
Number of Post-mortem Examinations		439		

OCCUPATIONS OF MALE PATIENTS.

Attendants	..	..	3	Cloth worker	..	..	1	Furriers	..	..	4
Apothecary	..	..	1	Coachmakers	..	..	7				
Accountants	..	..	4	Coachmen	..	..	16	Gardeners	..	..	20
Actor	..	..	1	Coalheavers	..	..	7	Gasfitters	..	..	9
Agent	..	..	1	Coal whipper	..	..	1	Gas stokers	..	..	3
Artists	..	..	2	Coffee roaster		..	1	General dealers		..	3
				Collar makers	..	..	2	Gentleman	..	..	1
Bailiff	..	..	1	Collectors	..	..	2	Glass cutter	..	..	1
Bakers	..	..	18	Colourmen	..	..	2	Glass fitters	..	..	2
Bargemen	..	..	6	Commercial travellers			28	Glass grinder	..	..	1
Barmen	..	..	14	Commission agent	..		1	Glass silverer	..	..	1
Barometer makers		..	2	Commissionaire	..		1	Glass workers	..	..	3
Basket makers	..	..	5	Compositors	..	..	21	Greengrocers	..	..	3
Beadle	..	..	1	Confectioners	..	..	4	Grocers	..	..	8
Bill poster	..	..	1	Cooks	..	..	12	Grooms	..	..	11
Blacksmiths	..	..	7	Coopers	..	..	4	Gymnasts	..	..	2
Blind maker	..	..	1	Cork cutters	..	..	3				
Boatmen	..	..	2	Costermongers	..	..	8	Hairdressers	..	..	5
Boiler makers	..	..	4	Custom-house officers		..	3	Hammerman	..	..	1
Bonnet-shape makers		..	3					Harnessmakers		..	2
Bookbinders	..	..	18	Decorators	..	..	7	Hatters	..	..	2
Boot finishers	..	..	4	Distiller	..	..	1	Hawkers	..	..	28
Boot-last maker		..	1	Diver	..	..	1	Horse keepers	..	..	7
Bootmakers	..	..	43	Dock labourers		..	3	Horsehair dressers		..	3
Boot rivetters	..	..	4	Doll maker	..	..	1	Housekeepers	..	..	2
Box makers	..	..	5	Drapers	..	..	8				
Brass finishers		..	8	Draymen	..	..	4	Indiarubber maker		..	1
Brewers	..	..	17	Drovers	..	..	3	Instrument maker		..	1
Bricklayers	..	..	48	Druggist	..	..	1	Iron workers	..	..	5
Brickmakers	..	..	4	Dyers	..	..	2	Ivory turner	..	..	1
Brush makers	..	..	7								
Butchers	..	..	41	Electro-platers		..	3	Japanner	..	..	1
Builders	..	..	4	Embosser	..	..	1	Jewellers	..	..	5
Butlers	..	..	2	Engine drivers		..	5	Joiners	..	..	4
				Engineers	..	..	24	Journalists	..	..	2
Cabinetmakers		..	23	Engine fitters	..	..	3	Juggler	..	..	1
Cabmen	..	..	24	Errand boys	..	..	19				
Card maker	..	..	1					Labourers	..	..	269
Carmen	..	..	89	Fancy-box maker		..	1	Lamplighters	..	..	3
Carpenters	..	..	48	Farriers	..	..	4	Lath render	..	..	1
Carpet worker		..	1	Fitters	..	..	4	Laundry men	..	..	2
Carriers	..	..	2	Firemen	..	..	5	Leather cutters		..	5
Cattle dealers	..	..	2	Fishermen	..	..	3	Leather dressers		..	3
Cellarmen	..	..	9	Fishmongers	..	..	13	Lightermen	..	..	6
Chaff-cutters	..	..	3	Fish salesmen	..	..	3	Lithographers	..	..	4
Chair-makers	..	..	8	Floor-cloth make		..	1	Looking-glass makers		..	3
Chemist	..	..	1	Flower makers		..	2				
Chimney sweeps		..	3	Fruit seller	..	..	1	Machinists	..	..	3
Cigar-box maker		..	1	Footmen	..	..	3	Machine rulers		..	2
Cigar makers	..	..	5	Foreman	..	..	1	Masons	..	..	12
Clerks	..	..	71	French polishers		..	8	Mechanics	..	..	4
Clockmakers	..	..	5	Furniture dealers		..	3	Messengers	..	..	8
								Milkmen	..	..	4

OCCUPATIONS OF MALE PATIENTS (*continued*).

Miller	..	..	1	Ragmen	..	..	2	Stokers	..	..	7
Moulder	..	..	1	Railway inspector	..		1	Students	..	..	8
				Railway porters	..		12	Surgeons	..	..	6
Newsvendors	..		3	Rope makers	..	..	2	Surveyors	..	..	2
Night watchmen	..		2					Sweeps	..	..	5
				Sailmaker	..	..	1				
Oilmen	..	..	2	Sailors	..	..	29	Tailors	..	..	26
Omnibus conductors	..		12	Sawyers	..	..	11	Tallow chandler	..		1
Ostlers	..	..	14	Scaffolder	..	..	1	Tea taster	..	..	1
				Scavenger	..	..	1	Telegraph clerks	..		3
Packers	..	..	22	Schoolboys	..	..	161	Ticket writers	..	..	2
Packing-case makers	..		4	Servants	..	..	8	Timekeeper	..	..	1
Painters	..	..	50	Sewermen	..	..	2	Tinmen	..	..	3
Paper cutter	..	..	1	Shipwright	..	..	1	Tin-plate workers	..		5
Paperhangers	..	..	5	Shirt maker	..	..	1	Tobacconists	..	..	2
Paper folder	..	..	1	Shepherd	..	..	1	Turners	..	..	11
Paper makers	..	..	3	Shoeblacks	..	..	2	Typefounders	..	..	4
Paper stainers	..	..	2	Shop boys	..	..	3				
Pensioners	..	..	3	Shopmen	..	..	21	Umbrella makers	..		5
Photographers	..		3	Signalmen	..	..	2				
Pianoforte makers	..		2	Silver polishers	..		3	Van boys	..	..	17
Picture-frame makers	..		5	Silversmiths	..	..	3	Vergers	..	..	4
Plasterers	..	..	11	Skin dressers	..	..	5				
Platelayers	..	..	4	Slaters	..	..	2	Waiters	..	..	18
Plumbers	..	..	15	Smiths	..	..	7	Warehousemen	..		19
Pointsman	..	..	1	Soldiers	..	..	13	Watchmakers	..	..	5
Policemen	..	..	9	Solicitor	..	..	1	Watermen	..	..	2
Polisher	..	..	1	Spectacle maker	..		1	Weaver	..	..	1
Porters	..	..	106	Stainer	..	..	1	Wheelwrights	..	..	4
Potter	..	..	1	Stationer	..	..	1	White-lead workers	..		2
Potmen	..	..	13	Stay maker	..	..	1	Whitesmiths	..	..	2
Printers	..	..	59	Stereotyper	..	..	1	Wine packer	..	..	1
Printer's boys	..	..	14	Stewards	..	..	2	Wood choppers	..		2
Publicans	..	..	7	Stevedores	..	..	9	Writers	..	..	6
Pupil teachers	..	..	4	Stick makers	..	..	4				

OCCUPATIONS OF FEMALE PATIENTS.

Artist	1	Fish woman	1	Nurses (hospital)	32
Artificial-flower makers	19	Flower maker	1	„ (monthly)	14
		Flower sellers	3		
Bag makers	2	French polishers	3	Office cleaners	2
Ballet girl	1	Fringe maker	1	Ostrich-feather cutter	1
Barmaids	11	Furriers	8		
Basket maker	1	Fur sewers	2	Packers	3
Bead workers	2			Paper colourers	2
Bonnet makers	4	General dealers	3	Paper sorter	1
Bonnet-shape maker	1	Governesses	5	Purse maker	1
Bookbinders	4				
Bookfolders	13	Harlots	107	Rag sorters	3
Book sewers	2	Hat maker	1	Saw maker	1
Boot makers	2	Hawkers	2	School girls	114
Boot sewers	3	Horse-hair carder	1	Seampstresses	8
Box makers	16	Housekeepers	8	Servants	210
Brush drawers	2	Housemaids	19	Shirt maker	1
		Housewives	702	Shopwomen	17
Cabinet maker	1			Stay maker	1
Cartridge maker	1	India-rubber worker	1		
Chaff cutter	1	Ironers	5	Tailoresses	18
Charwomen	37			Teacher	1
Cigar makers	4	Lace maker	1	Telegraphists	2
Collar makers	4	Laundresses	41	Tent maker	1
Cooks	23			Tie makers	3
		Machinists	32	Toy maker	1
Dressmakers	19	Manglers	2	Trimming maker	1
Dyer	1	Mantle makers	2		
		Mat maker	1	Umbrella makers	5
Envelope folders	3	Match maker	1	Upholstresses	3
		Milk carrier	1		
Factory girls	7	Milliners	9	Waistcoat makers	2
Fancy-box makers	4	Musician	1	Waitresses	7
Fancy-shop keeper	1			Ward maids	8
Feather makers	3	Needlewomen	29	White-lead workers	12

MEDICAL REPORT.

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
GENERAL DISEASES, A.																							
Varicella (1)	8	4	4	..	..	3	..	3	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Measles (2)	43	25	17	..	1	20	1	12	..	1	..	3	..	6	..	..	..	..	..	..	..	..	..
Scarlet Fever (3)	70	40	28	2	..	11	1	17	..	4	..	15	..	18	..	2	1	1	..	..	..	..	..
Typhus (4)	4	2	..	1	1	..	..	..	..	..	..	2	..	..	1	..	1	..	..	..	..	..	..
Typhoid (5)	146	80	50	11	5	3	..	9	..	19	1	35	4	51	7	10	3	1	..	2	..	..	1
Febricula	32	13	19	..	..	6	..	5	..	6	..	8	..	4	..	2	..	1	..	..	..	..	..
Rötheln	2	..	2	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Diphtheria	21	5	10	5	1	3	6	5	..	3	..	..	..	4	..	..	..	..	..	..	..	..	..
Parotitis	2	1	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ague	2	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..
Pyæmia (12)	11	3	1	3	4	..	..	..	1	..	1	..	2	2	2	2	1	..	..	..	..	..	..
Whooping-cough	17	4	10	..	3	10	2	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	358	179	142	22	15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
GENERAL DISEASES, B.																							
Rheumatic Fever (6)	195	104	88	1	2	..	..	4	3	18	..	50	..	82	..	22	..	13	..	3	..	..	..
Chronic Rheumatism	63	26	37	..	..	..	..	4	..	4	..	11	..	17	..	11	..	8	..	5	..	2	..
Muscular ,, ...	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Lumbago	10	8	2	..	..	..	..	..	..	..	..	..	..	2	..	1	..	2	..	4	..	1	..
Gonorrhœal Rheumatism ..	5	5	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..
Gout—	18	16	1	1	..	..	..	..	..	..	..	..	..	1	1	2	..	9	..	4	..	1	..
Osteo-arthritis (7)	4	..	4	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	1	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
GENERAL DISEASES, B (*continued*).																							
Scrofula	2	1	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
General Tuberculosis	2	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rickets	7	2	2	1	2	3	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Purpura [10]	7	5	2	..	..	1	..	..	..	1	..	2	..	..	..	..	..	2	..	1	..	..	..
Amyloid disease	4	..	2	2	..	..	..	..	..	..	..	..	..	2	..	..	2	..	..	..	..	..	..
Syphilis	6	4	2	..	..	3	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..
Anæmia	21	2	19	..	..	..	..	..	..	1	..	9	..	10	..	..	..	1	..	..	..	..	..
Chlorosis	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Epistaxis	3	2	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..	..	..
Lymphadenoma [9]	4	2	1	..	1	..	..	..	..	1	1	..	..	..	..	..	..	1	..	1	..	..	..
Leucocythæmia	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Addison's disease [11]	2	1	..	..	1	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..
General Anasarca [8]	4	2	..	2	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
	360	181	164	9	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
LOCAL DISEASES.																							
DISEASES OF THE NERVOUS SYSTEM.																							
Meningitis [17]	11	3	3	2	3	2	1	..	2	2	..	1	1	..	1	..	..	..	1	..	..	..	..
,, Tubercular	11	..	..	4	7	..	6	..	4	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Apoplexy [18]	20	1	..	15	4	..	..	..	..	..	..	..	2	..	1	..	1	1	7	..	5	..	3
Hydrocephalus	3	1	2	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tumour [16]	9	4	..	4	1	..	..	1	..	..	..	..	2	2	1	..	..	1	2	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
Chronic Myelitis	3	..	2	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	1	..	..	..
Hemiplegia [19]	24	19	5	..	..	2	..	..	..	..	..	..	..	1	..	4	..	6	..	6	..	5	..
Paraplegia [14]	20	13	5	1	1	..	..	2	..	1	..	2	..	5	1	4	1	3	..	1	..	..	..
Progressive Muscular Atrophy	3	1	2	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..
Locomotor Ataxy [25]	12	11	1	..	..	..	..	..	..	..	..	..	..	5	..	4	..	2	..	1	..	..	..
Disseminated Sclerosis	2	1	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..
Spinal Paralysis (Infantile)	2	2	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ditto (Adult) [23]	1	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Paralysis Agitans	3	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..
Epilepsy [20]	35	21	11	3	..	1	..	5	..	4	..	1	..	4	..	9	1	2	2	3	..	3	..
Chorea [26]	29	6	21	..	2	1	..	6	1	13	1	4	..	2	..	..	..	..	..	..	..	1	..
Hysteria [27]	33	..	33	..	..	..	..	..	..	2	..	5	..	21	..	3	..	2	..	..	..	..	..
Convulsions (Infantile)	12	5	5	..	2	10	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Facial Paralysis [21]	6	2	4	..	..	1	..	..	..	..	..	..	..	3	..	1	..	1	..	..	..	..	..
Paralysis of other nerves	8	6	1	..	1	1	1	..	..	1	..	..	..	1	..	..	..	3	..	1	..	..	..
Spasm of Muscles	6	4	2	..	..	..	..	..	..	1	..	..	..	1	..	2	..	1	..	1	..	..	..
Laryngismus	3	2	1	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Neuralgia—	4	3	1	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	1	..	..	..
Sciatica	10	5	5	..	..	..	..	..	..	..	..	1	..	4	..	2	..	1	..	1	..	1	..
Pleurodynia	3	2	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..
Cephalalgia—	9	6	3	..	..	..	..	..	..	..	..	..	..	4	..	2	..	2	..	..	..	1	..
Vertigo	4	4	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	..	..
Migraine—	2	1	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..
Numbness	2	2	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..
Unilateral Atrophy of Face [13]	2	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
Pseudo-hypertrophic paralysis (24)	4	3	1	..	..	..	..	1	..	3	..	..	..	1	..	..	..	..	..	..	..	..	..
Atrophy	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mania (28)	6	4	2	..	..	..	..	..	..	..	..	..	..	1	..	3	..	2	..	..	..	..	..
Melancholia	4	2	2	..	..	..	..	..	..	..	..	..	..	3	..	..	..	1	..	..	..	..	..
Dementia	2	..	2	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..
Amentia	3	1	2	..	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Insomnia	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Tetanus..	2	1	..	1	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Tetany (22)	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Hydrophobia (15)	1	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
	317	141	123	32	21	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died	Discharged.	Died,	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died,
DISEASES OF THE CIRCULATORY SYSTEM.																							
Pericarditis (23)	3	1	..	1	1	..	..	..	..	..	2	..	..	..	..	..	..	1	..	..	..	..	..
Morbus Cordis (34)—																							
Aortic	32	22	4	5	1	..	..	..	..	..	..	2	..	4	..	6	3	8	2	4	..	2	1
Mitral	82	22	39	8	13	..	..	3	1	9	1	11	3	16	3	14	7	6	3	2	2	..	1
Aortic and Mitral	25	10	9	5	1	1	..	..	1	2	..	2	..	6	2	1	1	5	2	2	..	..	..
Congenital	1	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Unspecified	5	1	1	1	2	..	..	..	..	..	..	..	1	..	2	1	..	1	..	..	..	..	..
Palpitation	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Ulcerative Endocarditis (35) ..	2	..	..	2	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
Aneurism of Aorta ([31])— ..	13	7	3	3	..	..	..	..	..	..	..	..	..	2	1	3	..	4	2	..	..	1	..
Thrombosis ([30])	4	1	2	..	1	..	..	..	..	..	..	1	..	..	..	2	..	..	1	..	..	..	..
Exophthalmic Goitre— .. .	2	..	2	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..
Pulsating Aorta	4	2	2	..	..	..	..	..	..	..	..	..	..	1	..	2	..	1	..	..	..	..	..
Enlarged Spleen	3	1	2	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	1	..	..	..
	177	68	65	25	19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.		—10.		—15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
DISEASES OF THE RESPIRATORY SYSTEM.																							
Laryngitis—	14	5	8	1	..	6	1	3	..	1	..	..	..	..	..	1	..	1	..	1	..	..	..
Croup	1	..	1	..	..	1	..	..	..	..	..	for	Trac	heot	omy	cases	see	Sur	gical	Tab	les.	..	..
Bronchitis (36)	109	32	48	10	19	19	11	5	..	1	..	3	1	11	3	18	5	8	3	6	4	9	2
Hysterical Dyspnœa	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
Pneumonia lobar (39)	137	82	27	17	11	8	2	19	..	9	..	22	..	26	11	13	7	9	5	2	2	1	1
lobular ..	3	..	2	..	1	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Phthisis (38)	135	51	32	27	25	..	..	1	1	3	..	6	4	35	10	29	26	7	9	2	2	..	..
Cirrhosis of Lung	1	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Abscess of Lung—	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Hæmoptysis	13	6	7	..	..	..	..	..	..	1	..	1	..	4	..	3	..	2	..	2	..	..	..
Pleurisy (35)	55	38	12	3	2	2	4	3	..	3	..	3	..	12	1	17	..	7	..	2	..	1	..
Empyema (37)	21	11	6	2	2	5	1	4	..	2	..	1	..	2	1	2	1	..	1	..	..	1	..
Mediastinal Tumour (32) ..	8	3	1	2	2	..	..	1	..	..	..	..	1	..	..	..	1	2	1	1	1	..	..
Drowning	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
	500	229	147	62	62	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
DISEASES OF THE DIGESTIVE SYSTEM.																							
Glossitis	2	2	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..
Stomatitis	4	1	3	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tonsillitis	48	19	29	..	..	6	..	5	..	6	..	7	..	17	..	5	..	1	..	1	..	..	..
Carcinoma of Œsophagus (65) ..	6	4	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2	2	..
Dilatation of Stomach	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Ulcer „	11	5	6	..	..	..	..	..	..	..	..	..	..	2	..	3	..	3	..	2	..	1	..
Carcinoma „	5	..	..	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	2
Hæmatemesis	12	4	5	1	2	..	..	..	..	..	..	2	1	2	1	3	..	2	..	..	1	..	..
Gastritis	5	4	1	..	..	..	..	..	..	1	..	..	..	3	..	..	..	..	..	1	..	..	..
Gastralgia	6	..	6	..	..	..	..	..	..	..	..	1	..	1	..	1	..	..	..	3	..	..	..
Dyspepsia	21	10	11	..	..	..	..	1	..	..	..	3	..	5	..	5	..	3	..	4	..	..	..
Vomiting	4	2	2	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	..	..	1	..
Carcinoma of Duodenum ..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
DISEASES OF THE DIGESTIVE SYSTEM (*continued*).																							
Enteritis	3	1	1	1	..	..	..	..	..	..	..	..	..	1	1	..	..	1	..	..	..	..	..
Chronic Dysentery	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..
Perityphlitis (63)	15	6	8	1	..	..	..	..	..	5	..	3	..	5	..	..	1	1	..	..	..	..	..
Intestinal Obstruction (64) ..	2	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Constipation	26	10	16	..	..	..	..	2	..	1	..	13	..	4	..	..	..	4	..	2	..	..	..
Diarrhœa	17	9	8	..	..	3	..	2	..	1	..	2	..	3	..	3	..	..	..	1	..	2	..
Colic	12	5	7	..	..	..	..	..	..	1	..	1	..	4	..	1	..	2	..	2	..	1	..
Melœna	3	..	3	..	..	..	..	..	..	..	..	1	..	..	..	..	..	2	..	..	..	..	..
Foreign Body	1	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
Cirrhosis of Liver (54)	26	10	5	5	6	..	..	..	..	..	..	..	..	1	2	3	4	8	3	2	1	1	1
Abscess (53) „	3	3	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..
Hydatid (56) „	4	1	1	1	1	..	..	..	..	..	..	..	..	1	2	..	..	..	..	1	..	..	..
Carcinoma (57) „	12	3	..	7	2	..	..	..	..	..	..	..	..	..	..	..	1	1	3	..	4	2	1
Enlargement	6	2	2	2	..	..	..	..	..	..	..	..	..	..	1	2	1	1	..	..	..	1	..
Acute Yellow Atrophy (62) ..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..
Pylephlebitis	2	..	..	..	2	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..
Jaundice (58)	22	8	12	..	2	..	..	1	..	1	..	1	..	5	1	7	..	3	..	..	1	2	..
Biliary Colic	3	3	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	..
Peritonitis (*a*) Acute (59) ..	13	..	..	5	8	..	..	..	..	..	1	..	2	..	3	..	2	..	2	..	1	..	2
„ (*b*) Chronic	8	5	3	..	..	..	..	2	..	2	..	..	..	1	..	..	..	2	..	1	..	..	..
Carcinoma of Peritonœum ..	4	1	2	..	1	..	..	..	..	1	..	..	..	..	..	1	..	..	1	1	..	..	..
Ascites (60)	17	4	11	1	1	..	..	1	..	2	..	..	..	2	..	6	..	1	2	2	..	1	..
Abdominal Tumour (61) ..	36	4	31	..	1	1	..	..	..	..	..	2	..	8	..	10	..	4	1	7	..	3	..
Carcinoma of large Intestine ..	3	..	1	..	2	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	1
Hæmorrhoids	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
	367	127	176	30	34	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
DISEASES OF THE URINARY SYSTEM.																							
Parenchymatous Nephritis—																							
1. Acute [45]	37	22	5	7	3	6	1	4	3	4	1	4	1	7	2	2	..	..	1	..	1	..	..
2. Chronic [47]	35	14	11	6	4	..	..	1	..	1	..	1	..	4	2	8	4	7	3	3	..	..	1
Granular Kidney [45]	30	13	6	6	5	..	..	..	..	..	..	1	..	4	..	4	1	4	3	6	7	..	..
Abscess of Kidney [40]	7	3	2	2	..	..	..	..	..	..	..	1	1	2	..	1	..	..	..	1	..	..	1
Hydronephrosis	3	2	1	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	..	..	..
Calculus (Renal)	4	1	3	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	1	..	..	..
Floating Kidney	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Cancer of Kidney [41]	2	..	1	1	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..
Tuberculosis of Urinary Organs	1	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Cystitis	8	5	2	1	..	..	..	..	..	..	..	..	..	2	1	1	..	1	..	1	..	2	..
Retention of Urine	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Incontinence of Urine	2	1	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..
Cancer of Bladder	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..
Hydatid [42]	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Hæmaturia [44]	14	9	3	2	..	..	..	..	..	..	..	3	..	2	..	2	..	2	..	1	1	2	1
Albuminuria	13	8	4	..	1	1	..	1	..	..	..	2	..	2	..	4	..	1	..	1	1	..	..
Glycosuria	16	9	7	..	..	..	..	..	..	..	..	1	..	5	..	5	..	1	..	4	..	..	..
Polyuria	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
	177	91	47	25	14	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
DISEASES OF THE GENERATIVE SYSTEM.																							
Vaginitis	4	..	4	..	..	..	..	..	..	..	..	..	..	3	..	..	..	1	..	..	..	..	..
Imperforate Hymen [51]	4	..	4	..	..	..	..	..	..	..	..	3	..	1	..	..	..	..	..	..	..	..	..
Oophoritis	6	..	6	..	..	..	..	..	..	..	..	..	..	6	..	..	..	..	..	..	..	..	..
Displaced Ovary	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Pelvic Cellulitis [49]	2	..	2	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..
Hæmatocele	2	..	2	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..
Cervix, Ulceration of	2	..	2	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..
„ Catarrh of	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
„ Hypertrophy of	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Metritis	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Perimetritis [48]	15	..	15	..	..	..	..	..	..	..	..	..	..	10	..	4	..	1	..	..	..	..	..
Parametritis	24	..	24	..	..	..	..	..	..	1	..	2	..	11	..	9	..	1	..	..	..	..	..
Fibroma Uteri	34	..	34	..	..	..	..	..	..	..	..	..	..	11	..	11	..	12	..	..	..	..	..
Carcinoma Uteri	25	..	22	..	3	..	..	..	..	..	..	..	..	..	..	4	..	15	1	3	2	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
DISEASES OF THE GENERATIVE SYSTEM (*continued*).																							
Ante-flexion	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Prolapsus	6	..	6	..	..	..	..	..	..	..	..	1	..	2	..	1	..	1	..	1	..	..	..
Malformations (50)	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Lupus Vulvæ	4	..	4	..	..	..	..	..	..	..	..	..	..	1	..	2	..	1	..	..	..	..	..
Epithelioma Vulvæ	9	..	9	..	..	..	..	..	..	..	..	..	..	1	..	3	..	3	..	..	..	2	..
Blood Cyst of Labium	2	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..
Caruncle of Urethra	5	..	5	..	..	..	..	..	..	..	..	1	..	1	..	1	..	2	..	..	..	..	..
Amenorrhœa	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Dysmenorrhœa	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Menorrhagia	7	..	7	..	..	..	..	..	..	..	..	..	..	2	..	3	..	2	..	..	..	..	..
Leucorrhœa	2	..	2	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..
Pelvic Tumour	8	..	8	..	..	..	..	..	..	..	..	..	..	2	..	4	..	2	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
AFFECTIONS CONNECTED WITH PREGNANCY.																							
Pregnancy..	8	..	8	..	..	..	..	..	..	..	..	..	..	7	..	1	..	..	..	..	..	..	..
Abortion	13	..	13	..	..	..	..	..	..	..	..	..	..	8	..	2	..	3	..	..	..	..	..
Retroversion of Gravid Uterus[52]	3	..	3	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..
Extra Uterine Fœtation [53] ..	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Retention of Part of the Ovum ..	4	..	4	..	..	..	..	..	..	..	..	..	..	3	..	1	..	..	..	..	..	..	..
	198	..	195	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
CONDITIONS NOT NECESSARILY ASSOCIATED WITH GENERAL OR LOCAL DISEASES.																							
Obesity	5	..	4	..	1	..	..	..	..	..	..	..	..	..	..	1	..	2	..	1	1	..	..
Debility	45	9	36	..	..	4	..	2	..	2	..	4	..	19	..	4	..	5	..	4	..	1	..
Destitution	7	3	2	1	1	..	2	..	..	2	..	..	..	1	..	1	..	..	..	..	..	1	..
Nil	5	3	2	..	..	..	..	..	..	..	..	1	..	3	..	..	..	..	..	1	..	..	..
	62	15	44	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
DISEASES OF THE CUTANEOUS SYSTEM.																							
Erythema Læve	10	5	5	..	..	2	..	..	..	..	..	1	..	4	..	1	..	1	..	1	..	..	..
„ Nodosum	4	..	4	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	..	..	..	..
Urticaria	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Psoriasis	7	3	4	..	..	..	..	1	..	1	..	2	..	1	..	..	..	..	..	2	..	..	..
Pemphigus	4	2	2	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..
Eczema	12	5	7	..	..	..	..	..	..	2	..	2	..	3	..	..	..	4	..	..	..	1	..
Ecthyma	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Herpes Zoster	3	..	3	..	..	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..
Lupus	2	2	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Scleroderma (67)	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Ichthyosis	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Pityriasis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Molluscum Contagiosum	2	1	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Myxœdema (69)	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Kerion	1	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Furunculus	1	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Gangrene (68)	2	1	..	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Erysipelas (facial) (66)	38	21	14	3	..	..	..	2	..	1	..	6	..	8	..	11	2	3	..	4	1	..	..
Pediculi Capitis	2	2	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tinea Tonsurans	2	..	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	96	44	48	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.		— 10.		— 15.		— 20.		— 30.		— 40.		— 50.		— 60.		Over 60.	
		M	F	M	F	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.	Discharged.	Died.
POISONS.																							
Lead (75)	20	11	9	..	..	..	..	..	..	..	..	3	..	9	..	6	..	1	..	1	..	..	..
Mercury (74)	3	3	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..
Phosphorus	4	..	4	..	..	..	..	..	..	..	..	1	..	2	..	..	..	1	..	..	..	..	..
Arsenic	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Iodine	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
White Precipitate (72)	3	1	1	..	1	..	..	..	..	..	..	1	..	..	1	1	..	..	..	..	..	..	..
Caustic Potash	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ammonia (70)	1	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nitric Acid	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Hydrochloric Acid	2	1	1	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..
Oxalic Acid	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..	..	..
Carbolic Acid	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Alcohol—																							
Intoxication	8	5	3	..	..	..	..	..	..	..	..	..	..	2	..	3	..	2	..	..	..	..	..
Coma	3	2	1	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..
Delirium Tremens	19	15	3	1	..	..	..	..	..	..	..	..	..	1	..	11	1	6	..	..	..	..	..
Opium (73)	3	1	1	1	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..
Calabar Bean (71)	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Uncertain Poison	3	2	1	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..
	79	47	29	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

ABSTRACT OF TABLE.

DISEASES.	Total Number of Cases completed during the Year.	Number of Cases discharged.		Deaths.		Remaining in the Hospital at the end of the year 1882.
		M.	F.	M.	F.	
General Diseases, A	358	179	142	22	15	
Do. Do. B	360	181	164	9	6	
Local Diseases—						
Diseases of the Nervous System	317	141	123	32	21	
,, Circulatory System	177	68	65	25	19	
,, Respiratory System	500	229	147	62	62	
,, Digestive System..	367	127	176	30	34	
,, Urinary System	177	91	47	25	14	
,, Female Generative System	198	..	195	..	3	
,, Cutaneous System	96	44	48	3	1	
Conditions not necessarily associated with General or Local Diseases—						
Poisons	79	47	29	2	1	
Various	62	15	44	1	2	
	2691	1122	1180	211	178	220
		2302		389		
		2691				

APPENDIX TO TABLE I.

1. *Varicella.*—One child, 19 months old, had extensive semi-gangrenous sores, consequent on chicken-pox.

2. *Measles.*—One case had varicella 1 month afterwards; 1 male, aged 19, had acute pneumonia of left base; 1 had a suppurating inguinal gland.

3. *Scarlet Fever.*—The complications were enlarged cervical glands in 2 cases; parotid abscess in 1; phlebitis and gluteal abscess in 1; this patient had also granular kidneys. One other had granular kidneys, and died with pneumonia. Eleven cases had acute nephritis. All recovered except one, who was found post-mortem to have pus in several joints (Cf. Abstract of 70 cases in St. Bartholomew's Hospital Reports for 1882, by Dr. King).

4. *Typhus.*—One of the fatal cases was the Sister of Radcliffe Ward. She had been many years in the Ward, and had constantly had typhus patients to nurse. Her own sister died also of typhus at about the same age.

5. *Typhoid.*—The cause of death in 3 cases was pneumonia; one of these had acute cystitis; in 1, exhaustion from profuse diarrhœa; in 6, perforation; in one of these perforation occurred during convalescence; and one had a parotid abscess, and another ulceration of the epiglottis.

Complications:—

Periostitis in 5.
Abscesses in 7 (in buttock, cheek, breast, scalp, round rectum)
Parotid bubo in 2.
Severe hæmorrhage from bowels in 5.
Epistaxis in 2.
Severe peritonitis in 2.
Albuminuria in 2.
Thrombosis of femoral in 4.
Dryness in 1.

One case had mitral incompetence; 2 were pregnant; and 1 aborted.

	Total.	M	F	No Heart Disease.		Permanent Heart Disease.									
						Mitral.		Aortic.		Aortic and Mitral.		Pericard. and Mitral.		Pericard.	
				M	F	M	F	M	F	M	F	M	F	M	F
1st Attack.. ..	72	35	37	23	9	4	20 [1]	2(2)	..	..	..	2	5	4	3
2nd Attack ..	49	26	23	10	4	13	12	..	1	..	2	..	2	3(3)	2
3rd Attack ..	19	10	9	2	2	6	5	1	..	..	..	1	1	..	1
4th Attack ..	7	4	3	1	..	3	3	..	..	..	..	..	..	..	..
5th Attack or more	9	4	5	..	..	2	4	1	..	1	1	..	..	..	..
Attack unspecified	25	20	5	11	1	7	3	..	..	..	..	2	1	..	..
	181	99	82	47	16	35	47	4	1	1	3	5	9	7	6
				63		118									

1. Two had a presystolic as well as a systolic murmur.
   One had pleuro-pneumonia.
   One had lead poisoning.
2. One had also pericarditis.
3. One had also aortic stenosis.

Of first attacks, 40/72=55·5 per cent. had permanent morbus cordis. The average age of the male was 24; of the female 23.

Of second attacks, 35/49 = 71·5 per cent.

Of third attacks, 15/19 = 80 per cent.

Of fourth and more, 15/16 = 93·5 per cent.

Of attacks not specified, 13/25 = 52 per cent.

Percentage of all cases taken together 118/181 = 65 per cent.

This percentage agrees almost exactly with that obtained from the analysis of last year's cases, which was 64 per cent.

Of the 3 fatal cases not included in the above list, two were aged 9 and one 10 years; 1 was a first attack; post mortem—vegetations were found on the mitral valve, with severe pericarditis; the other 2 were second attacks; one had pericarditis with stenosis of aortic and mitral valves, and vegetations on both; the other had adherent pericardium, mitral incompetence and acute myocarditis.

With these three fatal cases the percentage would be 121/181=66·8 per cent.

7. *Osteo-arthritis.*—Two cases had a systolic apex murmur.

8. *Anasarca.*—Three cases of general dropsy without albuminuria.

9. *Lymphadenoma.*—(1) M 40, 5 years ago, gland in right axilla enlarged, next year in the left side of the neck, and later in the left axilla and groin. (2) F. 10, granular kidney with hæmorrhage into alimentary canal and walls of stomach.

10. *Purpura.*—One case (M 55) had granular kidney.

11. *Addison's Disease.*—The fatal case died quietly during sleep; bronzing noticed 9 months; weak and languid, 1 month; retching, 14 days.

12. *Pyæmia.*—(1) From abscess round vermiform appendix. (2) From lumbar abscess. (3) From abscess in back, following the swallowing of false teeth, which stuck in throat, and were removed. (4) From suppuration over right external malleolus; no open wound.

Two cases after confinement:—(1) After abortion. (2) After miscarriage, 7 weeks before.

One was a case of multiple embolisms in connection with mitral disease.

One was a case of enlargements of glands without suppuration coming and going in different parts of body.

13. *Unilateral Atrophy of Face.*—(1) F 12: Mother insane for 2 years; was out of her mind just before birth of the child. Brother of patient, 14 years old, just gone insane. Five years ago, change in skin, first on left side of face, soon after in right hand with rigidity; face began to waste, and grey hairs appeared on left side of head; 2 years ago left eye affected. Pilocarpin-sweat affected atrophic side hardly at all. (2) F 48. (For full report of both cases, with photograph, refer to St. Bartholomew's Hospital Reports for 1882).

14. *Paraplegia.*—One case came on one month after parturition delivered with instrument.

15 *Hydrophobia.*—(M 15) June 11, bite in right index finger, wound slight and cauterized; thought to be quite well until July 13; jumping pain in right arm, radiating from shoulder down to fingers, less at night. July 14, same pain, "jumpings" three times a minute. July 15, paroxysms of jerky breathing, anxious expression, face flushed. 1 p.m., had first paroxysm on drinking. 3.30 p.m., feels giddy, as if he would fall. 10 p.m., catheter passed with great difficulty through nose, which produced several paroxysms, but patient was fed through it. 11 a.m., fits now frequent and violent; patient fed again through nose. 5 p.m., fed under chloroform, vomited after feeding each time; delirious all night. 6 a.m., died suddenly in a spasm.

16. *Tumour.*—In three of the fatal cases the seat of the tumour was:—(1) In the outer part of the corpus striatum and optic thalamus. (2) In the interpeduncular space, just above the sella turcica, but not attached to the bone.

(3) Multiple:—(*1*) In middle of corpus callosum. (*2*) Close to convolution above corpus callosum. (*3*) Outer part of corpus striatum. (*4*) Anterior part of left frontal lobe. The largest equal to a walnut. The history of this case was:—Fits since July, no loss of consciousness; Sept. 31 and Oct. 7, epileptic attack with loss of consciousness; Nov. 6, headache; Nov. 8, drowsy; Nov. 14, died.

17. *Meningitis.*—Five of the cases of simple meningitis were connected with chronic ear disease, and three had abscess of the brain; one of them had also necrosis of tibia and amyloid disease. Another (M 14) was admitted for rheumatic fever with a diastolic aortic murmur. The day after admission he had a rigor and enlarged spleen; rigors and rises in temperature followed in frequent succession, and the case was thought to be one of ulcerative endocarditis. Fourteen days later, discharge from right ear; a week later patient had headache, and gradually became drowsy and died. Post mortem, disease of mastoid cells and abscess of the brain.

18. *Apoplexy.*—In 6 the kidneys were granular. In 1 the vessels were very atheromatous and the left ventricle hypertrophied. In 3 the hæmorrhage was small (a pea) in middle of pons varolii. In 1 into the optic thælamus. In 1 into all the ventricles and the iter a tertio ad quartum ventriculum. In 1 there were numerous minute hæmorrhages in both sides of the brain, but no large hæmorrhage; the kidneys were not granular, nor the heart hypertrophied, and the vessels were not atheromatous. This patient was a male, aged 44. In 1 case the apoplexy was followed by epileptiform attacks till death, 4 days later.

19. *Hemiplegia.*—Left side, 7 cases (5 male and 2 female); right side, 11 cases (9 male and 2 female); unspecified, 6 cases. (1) Embolic with mitral disease. In 2 cases with hemianœsthesia. In 1, followed epilepsy of traumatic origin. In 1, associated with coma and rigidity. In 1, syphilitic.

20. *Epilepsy.*—In one case the spasms were strictly hemiplegic. This case was found to have fractured skull with hæmorrhage on surface of convolutions. In one fatal case, a loss of substance was found in the posterior part of the third frontal convolution, and softening of the tip of the temporo-sphenoidal lobe of the left side.

21. *Facial Palsy.*—Three cases due to otitis media; 1 due to syphilis (probably tumour); 1 came on after swelling along the facial nerve; in 1 case where the left side was paralysed, the right had been similarly paralysed three years before.

22. *Tetanus.*—M 9: Schoolboy, three weeks ago pain in back of head and neck; three days later, stiffness in neck and back; one week before admission, opisthotonos and trismus. Treated with chloral and recovered.

23. *Spinal Paralysis (Adult).*—One case came on after small-pox, in a lad of 19.

24. *Pseudo-hypertrophic Paralysis.*—(1) F 14: Born in Africa, always weak in legs; epileptic fit when 9 years old, difficulty in going up stairs 4 years. (2) M 7: did not walk till 3 years old, calves always large, hypertrophy of calves and infraspinatus; buttocks, thighs, and pectoral atrophied.

25. *Locomotor Atrophy.*—(1) M 22, had a brother similarly affected.

26. *Chorea.*—Eight cases had a systolic apex murmur persistent; but three of these had had rheumatic fever previously (4 years and 4 months and 3 months before); one case had pericarditis. In 1 case it came on during convalescence from typhoid fever. F 17: Had had chorea for 5 years on and off, and fits for the last 3 years. F 7: Had scarlet fever in June, rheumatic fever in July, chorea in September; no murmur. Eighteen had no heart murmur. One case was post-hemiplegic hemichorea, coming on in a man, aged 67, one month after hemiplegia. One fatal case (F 8) had no history of rheumatism or fright. The movements commenced on the right side one week before admission; 3 days later a systolic apex murmur was audible. Post mortem, growths on tricuspid, mitral and aortic valves were found.

27. *Hysteria.*—Two cases of paraplegia both recovered; one was of 4 months standing. One case of hemi-anæsthesia, commencing with a fit (loss of consciousness and movements). Eight weeks before, hemi-anæsthesia, hemi-analgcoia, ischœmia, left ovary tender, no affection of sight or hearing; left in *statu quo*. One case of hemi-analgesia was insane. One case of phantom tumour had been in Hospital in 1881. Disappeared on both occasions.

28. *Acute Mania.*—One case (M 32) was apparently due to the irritation of two tæniæ mediocanellatæ, for patient recovered immediately on passing them.

29. *Pericarditis*—Female, 12. In Feb. to Mar., in-patient with chorea, morbus cordis, and rheumatic fever. In August, chorea again; temperature 103° and double base murmur, became delirious, and died with pericarditis in a week. Post mortem, pericarditis acuta, vegetations on aortic, mitral and pulmonary valves.

30. *Thrombosis.*—One case of thrombosis of the left femoral, died suddenly with a clot in the pulmonary artery.

31. *Aneurism.*—Eight of thoracic aorta; 2 of abdominal aorta; 1 of innominate artery. In 1, thoracic aneurism, pulsation ceased entirely for a few days in the external tumour; in 1 ditto, patient had high temperature 104° before death for 10 days; no cause could be found for this or for death. In 1 abdominal aneurism, the patient (male, 30) had right hemiplegia in the ward, but recovered.

32. *Mediastinal Tumour.*—One male 18, breath short on Sept. 2nd. Sept. 13th, dyspnœa, stridor, lividity, swelling under left clavicle and in root of neck. October 25th, died after 7 weeks' illness. Post mortem: tumour in anterior mediastium, pus in right pleura, trachea flattened. 2. Female 38, cancer of both lungs and left breast, right breast was removed 8 years previously for cancer.

33. *Ulcerative Endocarditis.*—(1) male, 19, sudden death; (2) male, 16, meningitis. Post mortem, ragged ulceration of aortic valves; two abscesses in base of right lung; one in upper lobe of left.

34. *Endocarditis.*—In three cases of aortic and mitral disease the pericardium was also adherent. Mitral stenosis existed in 15 cases (12 females and 3 males), 5 being fatal (4 females and 1 male). In 9 cases the mitral murmur was double (presystolic and systolic). Three cases of mitral incompetence had as well adherent pericardium. One had hemiplegia 6 years previously, and 1 died with embolism of the cerebral arteries. No post mortem. In one case of mitral stenosis (male 18), there was a dense fibrous ring (probably congenital) below the aortic valve, as well as a small aneurism just above the valves, dissecting towards front of pericardium.

35. *Pleurisy.*—

	Right side.		Left side.		Unspecified.		Double.	
	M.	F.	M.	F.	M.	F.		
Dry Pleurisy	3	3	8	5	3	..	..	..
Pleurisy, with effusion	16	3	7	3	1	1	1(*a*)	1(*a*)

(*a*) Both died.

Paracentesis.—Eleven cases were tapped (10 males and 1 female). Quantities removed—96, 70, 55, 40, 38 ozs. One case (M 25), from whom 70 ozs. were removed, was in Mark, 2 years ago, with a cyst in left hypochondriac region, which was tapped with evacuation of 3 pints (? Hydatid). One patient was tapped twice, 90 ozs. and 30 ozs., with great relief. And one other many times, the fluid quickly reaccumulating.

36. *Bronchitis.*—In 22 associated with emphysema (males, 9; females, 13), one case was found to have cancer of lung, which had produced no symptom.

37. *Empyema.*—Of the fatal cases—(1) M 36: Was in Hospital in September, 1881, with ascites, and was tapped; in March, 1882, readmitted with ascites, and was found to have empyema; 80 ozs. of offensive pus removed by aspirator, and 80 ozs. again taken by free incision. (2) M 40: Empyema was thought to be due to thrombosis in connection with piles. (3) F 4: Was tapped, and 26 ozs. removed at first and on four subsequent paracenteses 4, 10, 1, and $7\frac{7}{8}$ ozs.—a free incision was made, the pus became offensive and pat: died.

Of the non-fatal cases—1 (M 8) was attributed to abscess of lung after circumcision. Three cases (aged 4, 3, and $2\frac{1}{2}$ years) were discharged with wound completely closed after incision. One other left with hardly any discharge. The rest, which were opened, left relieved. Two expectorated pus, one from spontaneous rupture into lung; the other, after operation 18 weeks previously, came back into

Hospital with history of having spit up blood and pus 5 weeks before readmission. One case came on after scarlet fever (M 3) One was readmitted for necrosis of a rib after a long standing empyema (F 5).

38. *Phthisis.*—In 2 of the fatal cases, general amyloid disease was found; in 1, chronic nephritis; in 1, chronic pericarditis; in 1, chronic peritonitis; in 1, an abscess formed in abdominal walls, which was evacuated. Of the 135 cases of phthisis smart hæmoptysis occurred in 21 males (in one was fatal) and 4 females, = 25/135 = 18 per cent.

39. *Pneumonia.*—

	M.	F.	Died.		Total.
			M.	F.	
Left base	28	9	3	2	42
Right base	32	11	5	2	50
Left apex	3	—	—	1	4
Right apex	11	4	3	1	19
Double	7	2	—	2	11
Unspecified	1	1	6	3	11
	82	27	17	11	137

In double pneumonia the base was attacked in all cases except one, in which right apex pn. was followed by left base pn. In most cases both bases were attacked at or about the same time. In two there was an interval of a week between the commencement of the two attacks. One case was followed by empyema. One case began at the right apex and extended to the whole lung. Three cases were complicated with mitral disease; and one had also pericarditis, but recovered. Two others had pericarditis, and died. Five cases had chronic kidney disease, and one cirrhosis of the liver. One was left with pleuritic effusion and was paracentesed. One had phthisis upon the same side as the base pneumonia.

40. *Abscess of Kidney.*—One opened in hypogastrium; 2 were aspirated: (1) twice, 14 ozs. and 1 oz.; (2) once, 4 ozs.

41. *Cancer of Kidney.*—The tumour in one case involved the jejunum and formed an ulcer by direct extension.

42. *Hydatids.*—One male, 47, had tumour in the lumbar region, and passed cysts in urine.

43. *Diabetes Mellitus.*—One case had phthisis, and one a systolic apex murmur. In one, sugar entirely disappeared for a time, but returned again, subsequently disappearing again, and the patient left with the urine free from sugar.

44. *Hæmaturia.*—In two cases was due to villous tumour of the bladder.

45. *Granular Kidney.*—Three cases had uræmia, and 1 died. One had epileptic fits; 1 died with minute hæmorrhages in the brain (left hemiplegia); and 1 with large hæmorrhages (apoplexy), (*a*) in pons; (*b*) in right optic thalamia; (*c*) in right corpus striatum; (*d*) in roof of lateral ventricle. One became suddenly comatose and died, post mortem, hæmorrhage into pons. Two had morbus cordis; (1) pericarditis adhesiva, which died; (2) mitral incompetence; (3) were subjects of chronic gout, and one of these had considerable pleuritic effusion.

46. *Acute Nephritis.*—In 14, after scarlet fever (11 males and 3 females); 3 died. One of the fatal cases had effusion into both pleura. Two cases (18 and 3½) died of uræmia. One case came on after typhoid fever.

47. *Chronic Parenchymatous Nephritis.*—One case died with double pleuritic effusion and had stenosis of aortic and mitral valves; one died with pericarditis; one had purpura.

48. *Perimetritis.*—Three cases—(1) burst through bowel; (2) through bowel and bladder; (3) in thigh.

49. *Pelvic Abscess.*—Burst through naval.

50. *Congenital Defects.*—One double vagina with absence of internal genital organs.

51. *Imperforate hymen.*—In two cases quantity evacuated was 50 ozs. and 80 ozs.

52. *Retroversion of Gravid Uterus.*—On September 27th, in O. P. room, 9 ozs. of urine drawn off; on September 29th, admitted, 5 pints drawn off, depositing 1 pint of pus. No rise of temperature, no sickness. September 30th, 5½ pints in 24 hours. October 1st, 3 pints, and gradually lessened.

53. *Extrauterine Fœtation.*—(1) A large hæmotocele, which subsequently communicated with the bowel, the patient losing 1 quart in one night, and nearly dying. (2) F 43 was in-patient 3 years ago; the fœtus died in Hospital; no special symptoms then and none since. (3) Married 4 months; pregnant 2 months. Fainted in surgery; abdominal pains; collapse; 3 days later passed a bit of decidua; uterus slightly enlarged; slight swelling in abdomen, which slowly subsided; a little hæmorrhage proceeded from uterus. Patient left well.

54. *Cirrhosis of the Liver.*—In 1 case, congenital disease of the heart was found in a persistent foramen-ovale, with slight stenosis of the tricuspid and mitral valves.

55. *Abscess of the Liver.*—(1) M 26, dysentery in India in 1880; abscess 3 weeks after discharge from Hospital; was tapped six times, and again 18 months later at Netley. In this Hospital aspirated 4 ozs. sweet pus; a little later free incision, 3 pints of pus; on leaving Hospital hardly any discharge. (2) M 28, in June, in 1877, for abscess, which voided by mouth (? empyema); in 1878, hæmoptysis (½ pint) twice, and three times since, the last time in August, 1882.

56. *Hydatids of Liver.*—Two cases were aspirated and recovered, one of the cysts containing numerous small daughter cysts. One of the two fatal cases died under ether during examination. Several hydatids were found post mortem: One partly free from right lobe of liver, another in the left lobe, and another between the bladder and rectum.

57. *Cancer of Liver.*—Secondary in 1 case to cancer of kidney; in 2 to cancer of pancreas; in 1 to cancer of rectum (a secondary deposit also in supra-renal); in 2 to cancer of stomach; in 1 associated with cancer of omentum. One case was tapped for hydatids.

58. *Jaundice.*—In 8 cases, catarrhal; in 3, probably connected with syphilitic disease of liver; 1 followed suppuration in the pelvis, with discharge of pus from rectum. This case recovered. One case was followed by pneumonia of the right base. In 1, multiple abscesses of the liver were found, the left lobe being completely excavated.

59. *Peritonitis.*—Of the fatal cases, 2 were due to ulceration of the vermiform appendix; 1 to stricture of colon; 1 to right obturator hernia; 1 to bursting of abscess of kidney; 1 to chronic dysenteric ulceration; 1 probably to pyæmia after scarlet fever. Four cases of chronic peritonitis were due to carcinoma, and one was fatal; 2 to fibroid of uterus, 1 of which was fatal.

60. *Ascites.*—In 1 case, came on after typhoid fever four months previously; in 1 case purpuric spots developed on abdomen.

61. *Abdominal Tumour.*—Six were malignant; 1 was a floating kidney; 1 ovarian tumour ruptured either through bladder or into peritoneum without peritonitis.

62. *Acute Yellow Atrophy.*—Patient died five hours after admission; liver weighed 2 lbs. History: April 22nd, at work, worse for drink; 23rd, loss of appetite; 24th, vomiting; 25th, jaundice; 27th, comatose, delirious, vomiting, tetanic convulsions, stertorous breathing, great diminution of liver dulness.

63. *Perityphlitis.*—Two cases were opened in right iliac fossa; one died. In 1 oth r case there was fœcal vomiting, with recovery.

64. *Intestinal Obstruction.*—In 3 cases due to cancerous stricture of (*a*) duodenum, (*b*) ascending colon, (*c*) rectum. In the cancer of the duodenum the cancer was due to extension from the abdominal lymphatic glands.

65.—*Stricture of Œsophagus.*—Of the 2 fatal cases—in 1, there was adhesion to lungs, with secondary growths in them. The stricture in this case was in the middle of the œsophagus. In 2, there was cancer of the left pleura, pericardium, and liver.

66. *Erysipelas.*—One died with D. T. In one the temperature before death reached 109·6°.

67. *Scleroderms.*—F. 26, cf. Path. Trans: vol. xxxi., 1880.

68. *Symmetrical Gangrene.*—F. 3.—

(1.) Nov. 13. A feverish attack with purpuric spots on limbs, but recovered in a day or two, and remained well till Dec. 1st. Then headache, and next day pain in calves, which became livid, and soon after backs of arms also affected; a few hours later the buttocks. Died 12 hours after admission, after several convulsions. Attack lasted only 32 hours. The parts affected were the legs in almost their whole extent, the buttocks and neighbouring part of the back, to backs of the arms and cheeks. The lesions were remarkably symmetrical. No cause found; post mortem.

M. 7. History of some fever (? Typhoid).

Nov. 25. Gangrene of right index.

Dec. 4. „ of right thumb.

„ 6. „ of left thumb.

„ 10. Erythema nodosum on legs, arms, and chest.

Jan. 9. Line of demarcation on hands.

Feb. 10. Right hand amputated, fingers being dead.

May 13. End of fore finger, and middle finger of left hand removed.

Aug. 19. Discharged, wounds being healed.

69. *Myxœdema.*—F. 55. Three children. Menopause at 43, since then loss of strength, memory week, slow speech, eyes and face puffy (bladders under eyes), legs and feet swollen. No albumen.

70. *Liquor Ammoniæ.*—Diphtheritic like patches on fauces.

71. *Calabar Bean.*—No symptoms.

72. *White Precipitate.*—Patient (female 20), had empyema and abscess of lung, took poison to kill herself, was delirious, and died from original disease.

73. *Opium.*—Male 65, an opium drinker, was brought in unconscious, but rallied and was removed, but died 24 hours after leaving hospital. Male, 5 months, died from one drachm of tincture opium, which was put into feeder to make it sleep.

74. *Mercury.*—(1) male, 42, at work as barometer maker 27 years. Eleven years ago shaky with jerking, got well in 5 months, but occasional tremors since. (2) male, 23, mouth sore, emaciation and sweating, with hæmatemesis and slight albuminuria. after working 3 months in electrical light work.

75. *Lead.*—Two cases of wrist drop out of 20.

SURGICAL REPORT.

TABLE I.

Showing the Total Number of Cases under Treatment during the Year 1882, *with the comparative Frequency and Mortality of each Disease at different Ages.*

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
General Diseases.																																			
Gout	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Erysipelas—(*a*) Simple	21	13	7	1	..	1	1	..	..	..	..	..	..	3	2	..	..	3	..	..	..	4	2	..	..	1	..	..	..	1	..	..	..	1	1	1	..
,, (*b*) Phlegmonous	40	26	9	1	4	2	..	..	1	..	..	..	..	1	2	..	..	4	1	..	..	5	1	..	2	6	3	1	..	8	1	..	..	..	1	..	1
Hysteria	6	..	6	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	4	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Venereal Diseases.																																			
Syphilis—																																			
Primary Sore	80	30	49	..	1	..	..	..	..	..	..	..	..	7	23	..	..	19	22	..	1	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Secondary Skin Eruptions—																																			
Roseola	4	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Psoriasis	4	3	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rupia	2	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Syphilitic Ulcers of Throat	4	2	2	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tertiary Syphilis—																																			
Ulcers and Gummata	27	8	18	1	..	..	..	..	..	..	..	..	..	1	1	..	..	4	6	..	..	1	4	..	..	2	6	..	..	..	1	1	..	..	..	..
Ulceration of Palate and Tongue	5	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Phagedenic Sores	19	16	3	..	..	..	..	..	..	..	..	..	..	2	..	..	..	11	1	..	..	1	1	..	..	1	1	..	..	1	..	..	..	..	..	..	..
Hereditary Syphilis	5	2	3	..	..	2	..	..	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Venereal Diseases (*continued*).																																			
Soft Sores	41	27	14	..	..	..	..	..	..	..	..	..	..	8	6	..	..	15	7	..	..	1	..	..	..	3	1	..	..	..	..	..	..	..	..	..	..
Condylomata	7	2	5	..	..	..	..	..	..	..	..	..	..	1	2	..	..	1	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bubo	12	8	4	..	..	..	..	..	..	..	..	..	..	..	1	..	..	6	3	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gonorrhœa	61	30	31	..	..	..	..	..	..	..	..	..	..	10	20	..	..	14	9	..	..	4	1	..	..	2	1	..	..	..	..	..	..	..	..	..	..
Balanitis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Paraphimosis	11	11	..	..	..	..	..	..	..	2	..	..	..	5	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Epididymitis	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gonorrhœal Rheumatism	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tumours.																																			
Carcinoma—																																			
Face	4	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	3	..	..	..
Lips	8	7	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	2	..	1	..	2	..	..	..
Mouth	5	3	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	3	..	..	1	..	..	..	..
Tongue	22	12	7	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	2	1	..	6	5	..	..	2	..	2	..
Œsophagus	6	1	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	3	..	..	..	1	..
Larynx	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Upper Jaw	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..
Breast	47	2	39	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	9	..	..	..	11	..	4	1	11	..	1	1	5	..	1
Rectum	9	7	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	3	..	..	..	3	..	..	..
Penis	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2	..	..	..
Scrotum	3	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Tumours (*continued*).																																					
Carcinoma (*continued*)—																																					
Urethra	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Bladder	2	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..
Vagina	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Uterus—																																					
Extirpation for Cancer	2	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..
Skin	4	3	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	1	1	..	..	..	..
Recurrent	11	3	5	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	1	2	..	1	1	1	..	1	1	..	..	..
Sarcoma—																																					
Breast	8	1	7	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	2	..	..	1	1	..	..
Bones—																																					
Face	6	3	2	1	..	..	..	..	..	..	1	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..
Femur	4	1	2	..	1	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..
Scapula	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Testis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Labium	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..
Uterus and Ovaries	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Scalp	3	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..
Other Parts	21	10	11	..	..	..	1	..	..	..	..	..	..	2	1	..	..	2	1	..	..	..	..	..	..	3	2	..	..	1	3	..	..	2	3	..	..
Recurrent	3	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Tumours (*continued*).																																			
Fibroma	24	7	17	..	..	..	1	..	..	..	..	..	..	..	3	..	..	5	5	..	..	..	3	..	..	1	4	..	..	..	1	..	..	1	..	..	..
Lipoma	14	6	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	2	1	..	..	..	3	..	..	2	1	..	..	1	2	..	..
Adenoma—																																			
Breast	7	..	7	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	3	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other Parts	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Papilloma—																																			
Lip	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Trachæa	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nipple	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Clitoris	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lymphoma	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Osteoma	15	8	7	..	..	..	..	..	..	2	..	..	..	5	4	..	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Enchondroma	2	1	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Parotid Tumours	2	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nævoid Tumour of Lip	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Doubtful Tumours	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..
Rodent Ulcer	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..
Lupus	17	4	13	..	..	..	..	..	..	..	..	..	..	2	9	..	..	2	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Keloid	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
TUMOURS (*continued*).																																			
Cysts—																																			
a. Sebaceous	32	19	13	..	..	..	1	..	..	..	2	..	..	3	1	..	..	5	6	..	..	6	1	..	..	1	..	..	..	2	..	..	..	2	2	..	..
b. Simple Cysts—																																			
Breast	3	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..
Upper Jaw	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Neck	3	..	3	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..
Other Parts	3	..	3	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
c. Dermoid Cysts	4	1	3	..	..	..	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Malformations—																																			
Leg and Forearm	2	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cleft Palate	21	12	9	..	..	3	2	..	..	3	3	..	..	6	3	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Harelip	20	8	12	..	..	7	10	..	..	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Imperforate Anus	2	1	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Spina Bifida	4	..	4	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Phimosis	91	91	..	..	..	37	..	..	..	16	..	..	..	21	..	..	..	13	..	..	..	3	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Ectopia Vesicæ	1	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Supernumerary Digits	2	1	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Deformities—																																			
Wry Neck	2	1	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Genu Valgum	21	16	5	..	..	1	1	..	..	3	1	..	..	11	2	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Talipes Equinus	2	1	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
„ Equino-Varus	13	10	3	..	..	8	2	..	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
„ Varus	2	1	1	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
TUMOURS (*continued*).																																			
Deformities (*continued*).																																			
Talipes Valgus	22	17	5	..	..	..	..	..	..	..	1	..	..	13	3	..	..	2	..	..	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..
Rickets	3	2	1	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lateral Curvature of Spine	10	3	7	..	..	..	..	..	..	..	1	..	..	3	5	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Genu Varum	2	2	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cicatrices, etc.	12	4	8	..	..	..	..	..	..	..	6	..	..	1	2	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Contracted Tendons, etc.	16	11	5	..	..	..	..	..	..	..	2	..	..	5	1	..	..	3	1	..	..	..	..	..	..	3	1	..	..	..	..	..	..	..	..	..
DISEASES OF THE NERVOUS SYSTEM.																																			
Spastic Rigidity of Legs	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..
DISEASES OF THE EYE.																																			
A. Conjunctiva—																																			
Catarrhal Ophthalmia	7	3	4	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	2	..	..
Purulent „	3	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Phlyctenular „	2	2	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gonorrhœal „	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
B. Cornea—																																			
Keratitis	12	5	7	..	..	..	1	..	..	..	1	..	..	2	3	..	..	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..
Interstitial Keratitis	11	4	7	..	..	..	..	..	..	1	..	..	..	3	5	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ulcers	18	5	13	..	..	3	2	..	..	..	1	..	..	..	5	..	..	1	2	..	..	1	2	..	..	..	1	..	..	..	..	..	..	..	..	..
Opacities	17	13	4	..	..	..	..	..	..	2	..	..	..	8	1	..	..	2	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of the Eye (*continued*.)																																			
B. Cornea—																																			
Fistula	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Suppurating Cornea	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Staphyloma	8	2	6	..	..	..	1	..	..	..	1	..	..	2	3	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Buphthalmos	2	1	1	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hypopyon	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..
Hyphæmia	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Herpes	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
C. Iris—																																			
Iritis	13	5	8	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	3	..	..	2	3	..	..	..	..	..	..	1	1	..	..	1	..	..	..
Rheumatic Iritis	4	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Syphilitic Iritis	5	4	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..
Occluded Pupil	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..
Synechiæ	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
D. Crystalline Lens—																																			
Cataract—																																			
Hard	40	25	15	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	1	..	..	4	1	..	..	8	4	..	..	12	8	..	..
Soft	11	7	4	..	..	1	..	..	..	1	..	..	..	1	1	..	..	2	1	..	..	1	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..
Traumatic	7	6	1	..	..	..	..	..	..	1	..	..	..	3	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..
Aphakia	7	4	3	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	2	..	..	..	..	..	..	2	..	..	..
Dislocation of Lens	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Opaque Capsule	4	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	1	1	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of the Eye (*continued*).																																					
E. Diseases of Retina and Optic Nerve—																																					
Optic Neuritis	4	..	4	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..
White Atrophy	4	3	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Detached Retina	3	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..
Glioma	2	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hæmorrhage into Retina ..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
F. Diseases of Choroid—																																					
Choroiditis	6	2	4	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	2	..	..	..	1	2	..	..	..	..	..	..	..	..	..
G. General Affections of the Eye—																																					
Glaucoma	21	6	15	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	4	..	..	..	3	..	..	2	3	..	..	3	5	..	..
Pan-Ophthalmitis	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..
Atrophied Eye	3	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..
Sympathetic Ophthalmia ..	6	5	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	2	..	..	..
H. Strabismus—																																					
Internal	61	25	36	..	..	2	4	..	..	14	12	..	..	9	17	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
External	2	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
I. Myopia	2	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hypermetropia	4	2	2	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Amblyopia	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Aniso-Metropia	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of the Eye (*continued*).																																					
J. Diseases of Lachrymal Apparatus—																																					
Lachrymal Obstruction	4	2	2	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Dacryo-cystitis	2	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stillicidium	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
K. Diseases of the Eyelids—																																					
Trichiasis	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Entropion	6	3	3	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	..	..	2	..	..	..	1	..	..	..	..	..	..	..
Blepharitis	4	4	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Blepharo-Spasm	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Œdema of Lids	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Ptosis	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ectropion	4	..	4	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tarsal Cysts	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases of Orbit—																																					
Abscess	2	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fibroma	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of the Ear.																																			
Otorrhœa	3	1	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Otitis Interna	5	2	2	1	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Abscess	2	1	1	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Polypus	4	1	3	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases of Respiratory System.																																			
Nose—																																			
Epistaxis	7	4	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	1	1	..	..	1	1	..	..
Deflected Septum	9	7	2	..	..	..	..	..	..	..	..	..	..	4	1	..	..	1	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Polypus	6	4	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	2	1	..	..	..	..	..	..	2	..	..	..	..	..	..
Ozæna	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Larynx—																																			
Laryngitis	3	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	..
Diphtheria and Croup	30	5	4	11	10	5	3	11	7	..	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Paralysis of Larynx	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases of the Circulatory System.																																			
Hæmophilia	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Aneurism—																																			
„ Carotid	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
„ Femoral	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
„ Popliteal	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..
„ Radial (Traumatic)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of the Circulatory System (*continued*).																																					
Nævus	17	9	8	..	..		6	..	..	1	..	..	..	3	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Varicose Veins	11	5	6	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	2	3	..	..	2	..	..	..	..	2	..	..	1	..	..
Phlebitis	16	6	10	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	2	..	..	1	3	..	..	2	1	..	..	1	4	..	..	..	..	..	..
Senile Gangrene	3	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	1	..	..
Arterial Nævus	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases of Absorbent System.																																					
Vessels—																																					
Inflammation	11	8	3	..	..	..	..	..	..	..	..	..	..	2	1	..	..	1	1	..	..	3	..	..	..	1	1	..	..	1	..	..	..	..	..	..	..
Glands—																																					
Inflammation	15	6	9	..	..	..	..	..	..	2	1	..	..	..	1	..	..	1	5	..	..	1	1	..	..	2	1	..	..	..	..	..	..	..	..	..	..
Abscess	4	4	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases of Digestive System.																																					
Lips—																																					
Acute Inflammation	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Mouth—																																					
Stomatitis	3	2	1	..	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ranula	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cancrum Oris	2	1	..	1	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dental Abscess	7	3	4	..	..	..	1	..	..	1	..	..	..	1	1	..	..	..	2	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Bleeding after extraction of a Tooth	2	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Palate—																																					
Perforation	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of the Digestive System (*continued*).																																			
Tongue—																																			
Glossitis	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Tubercular Disease	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Fauces—																																			
Tonsillitis	3	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Enlarged Tonsils	6	2	4	..	..	..	..	..	..	1	..	..	..	2	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Œsophagus—																																			
Post Pharyngeal Abscess	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Diseases of Intestines.																																			
Internal Obstruction	7	4	..	1	2	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	1	1	1	..	..	..	1	..	..
Intussusception	3	..	1	1	1	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hernia—																																			
„ Inguinal	21	19	2	..	..	1	1	..	..	..	..	..	..	1	..	..	..	6	..	..	..	4	..	..	..	1	..	..	..	1	..	..	..	5	1	..	..
„ Femoral	12	1	11	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	1	..	..	1	1	..	..	..	4	..	..
„ Ventral	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Strangulated—																																			
Inguinal	17	10	..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	2	..	2	..	1	..	1	..	2	..	1	..	1	..	2	..	1	..
„ Femoral	13	..	7	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	1	..	2	..	..	..	1	..	5
„ Umbilical	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
Suppuration of the Sac of a Femoral Hernia	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Hernia of a Cystic Ovary	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fæcal Fistula	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Umbilical Fistula	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of the Rectum.																																					
Hæmorrhoids	37	24	12	1	..	..	..	..	..	..	..	..	..	1	..	..	..	5	2	..	..	8	6	..	..	7	3	..	..	2	..	..	..	1	1	1	..
Fistula	42	31	11	..	..	..	..	..	..	1	..	..	..	3	..	..	..	7	6	..	..	8	3	..	..	3	1	..	..	9	1	..	..	..	..	..	..
Fissure	5	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Ulcer	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..
Stricture	10	1	7	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	4	..	..	1	..	..	..	..	..	..	..	..	..	1	1
Prolapsus	2	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Polypus	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rectal Abscess	10	5	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	3	..	..	2	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..
Diseases of Urinary Tract.																																					
Kidney—																																					
Hydro-Nephrosis	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tubercular Disease	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pyelitis	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Bladder—																																					
Cystitis	8	5	2	1	..	..	..	..	..	..	..	..	..	2	..	..	..	1	2	..	..	..	1	..	1	..	..	..	..	1	..	..	..	..	..	..	..
Calculus—																																					
1. Uric Acid	10	8	2	..	..	1	..	..	..	2	2	..	..	2	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..
2. Oxalates	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
3. Phosphates	3	2	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..
Ulceration	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of Urinary System (*continued*).																																					
Recto-Vesical Fistula	2	2	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Paralysis	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Hair Pin in Bladder	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Prostate—																																					
Enlarged Prostate	6	5	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	3	..	1	..
Abscess	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Urethra—																																					
Stricture—																																					
Organic	75	71	..	4	..	..	..	..	..	2	..	..	..	1	..	..	..	13	..	..	..	23	..	1	..	21	..	1	..	8	..	..	..	3	..	2	..
Retention of Urine	6	5	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	2	..	1	..
Extravasation „	4	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	1	..	..	..
Stone in Urethra	6	5	1	..	..	1	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Perineal Abscess	7	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..
„ Fistula	8	6	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Vascular Growth	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Incontinence of Urine	3	2	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Foreign Bodies	2	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Bleeding from Urethra	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Penis and Scrotum—																																					
Abscess	3	3	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of the Generative System (Male).																																			
Hypertrophy of Prepuce	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tunica Vaginalis —																																			
Hydrocele	20	20	..	..	..	..	..	..	..	..	..	..	..	9	..	..	..	4	..	..	..	4	..	..	..	1	..	..	..	2	..	..	..	..	..	..
Hæmatocele	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Cord —																																			
Varicocele	3	3	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Testis —																																			
Orchitis —																																			
Simple	2	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Syphilitic	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Strumous	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	..
Disease of the Generative System (Female).																																			
Ovary	18	..	16	..	2	..	..	..	..	..	..	..	..	..	1	..	..	..	9	..	..	..	5	..	..	..	..	..	..	1	..	..	..	1	..	1	..
Uterus Prolapsus	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Vagina —																																			
Vaginitis	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fistulæ —																																			
Recto-Vaginal	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of the Generative System (Female) (*continued*).																																					
Fistulæ (*continued*)—																																					
Vesico-Vaginal	3	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Vaginal Cicatrix	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Prolapse of Vaginal Wall	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Vulva—																																					
Noma	3	..	3	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Labial Abscess	2	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ruptured Perineum	12	..	11	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	8	..	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Hypertrophy of Labium	1	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Breast—																																					
Abscess	26	..	26	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	14	..	..	..	9	..	..	..	1	..	..	..	1	..	..	..	..	..	..
Inflammation	6	..	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	..	..	2	..	..	..	..	..	..
Diseases of Organs of Locomotion.																																					
Periostitis—																																					
1. Acute—																																					
Femur	5	3	..	2	..	2	..	..	..	..	..	..	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tibia	7	3	3	1	..	..	2	..	..	..	..	..	..	2	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fibula	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Humerus	1	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Radius	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Jaw	1	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of Organs of Locomotion (*continued*).																																			
Periostitis (*continued*).																																			
2. Chronic—																																			
Ilium	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Femur	4	1	3	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tibia	7	5	2	..	..	..	..	..	..	1	..	..	..	3	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fibula	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Radius	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Phalanx	2	..	2	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases of Bones.																																			
Osteo-Myelitis	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ostitis	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Chronic Abscess	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Caries—																																			
Upper Extremity	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..
Lower „	8	8	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..	1	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..
Bones of the Trunk	4	1	2	1	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..
Bones of the Head	3	1	..	1	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Necrosis—																																			
Bones of Head and Face	17	10	6	1	..	..	1	1	..	5	..	..	..	..	..	..	..	4	2	..	..	1	2	..	..	..	1	..	..	..	..	..	..	..	..	..
Humerus	5	4	1	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Radius and Ulna	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of Bones (*continued*).																																			
Necrosis (*continued*)—																																			
Wrist and Hand	11	6	5	..	..	..	1	..	..	..	..	..	..	2	2	..	..	1	..	..	..	..	1	..	..	2	1	..	..	..	..	..	1	..	..	..
Femur	3	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tibia	15	8	5	1	1	..	..	..	..	1	2	..	1	4	1	..	..	1	..	..	..	1	1	..	..	1	1	1	..	..	..	..	..	..	..	..
Foot and Ankle	4	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..
Rickets (*see* Deformities).																																			
Tumours (*see* Tumours).																																			
Old Amputations	14	12	1	..	1	..	..	..	..	3	..	..	..	3	1	..	..	1	..	..	1	1	..	..	..	2	..	..	..	2	..	..	..	..	..	..
Necrosis of Stumps	2	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Conical Stump	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Bulbous Nerves in Stump	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases of Joints.																																			
Rheumatic Synovitis	7	5	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	3	..	..	..	..	1	..	..	1	..	..
Acute Synovitis	71	46	25	..	..	2	1	..	..	1	1	..	..	12	8	..	..	13	10	..	..	10	3	..	..	5	1	..	.	2	1	..	..	1	..	..	..
Chronic ,, ...																																					

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of Joints (*continued*).																																			
Chronic Disease of—																																			
Sterno Clavicular	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Shoulder	4	4	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..
Elbow	14	5	8	1	..	..	..	..	..	..	..	1	..	2	2	..	..	1	3	..	..	1	1	..	..	1	2	..	..	..	..	..	..	..	..	..
Wrist and Carpus	7	2	5	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	3	..	..	..	1	..	..
Hand	10	8	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	1	..	..	..	4	1	..	..	..	..	..	..	1	..	..
Sacro-iliac	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hip	75	36	32	3	4	4	3	1	1	8	7	..	1	21	17	1	1	2	3	1	1	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Knee	80	50	28	1	1	6	5	..	..	11	5	..	..	12	12	1	..	11	2	..	..	6	3	..	1	2	1	..	..	2	..	..	..	..	..	..
Ankle and Tarsus	19	13	4	2	..	2	..	..	..	2	..	..	..	4	2	1	..	2	2	..	..	1	..	1	..	2	..	..	..	..	..	..	..	..	..	..
Foot	5	5	..	..	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..
Ankylosis	23	15	8	..	..	..	..	..	..	1	..	..	..	3	3	..	..	3	4	..	..	3	..	..	..	2	1	..	..	3	..	..	..	..	..	..
Loose Bodies	6	4	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	1	..	..	1	..	..	..	1	..	..	..	..	..	..
Acute Suppuration of Knee	2	..	..	2	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases of Spine.																																			
Psoas and Lumbar Abscess	19	11	7	..	1	1	..	..	..	..	3	..	..	3	..	..	..	3	..	..	1	2	1	..	..	1	2	..	..	1	1	..	..	..	..	..
Angular Curvature	26	18	8	..	..	4	2	..	..	..	..	..	..	3	2	..	..	6	3	..	..	2	..	..	..	1	..	..	..	2	1	..	..	..	..	..
Diseases of Bursæ.																																			
Bursa Patellæ	61	12	48	..	1	..	..	..	..	..	..	..	..	2	19	..	..	5	14	..	..	3	12	..	..	2	1	..	..	..	1	..	1	..	1	..	..
Olecranon	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged		Died.		Discharged		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases of Bursæ (*continued*).																																			
Semimembranosus	3	1	2	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Other Bursæ	3	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..
Palmar Ganglion	3	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	1	..	..	..
Diseases of Cellular Tissue.																																			
Abscess	202	132	66	2	2	9	6	1	1	17	10	..	..	30	15	..	..	34	15	..	..	17	12	..	..	10	3	..	..	5	4	1	1	4	1	..	..
Inflammation	24	17	7	..	..	1	1	..	..	..	1	..	..	3	1	..	..	3	1	..	..	5	2	..	..	3	1	..	..	1	..	..	..	1	..	..	..
Diseases of the Cutaneous System.																																			
Ulcer	54	29	24	1	..	1	1	..	..	..	2	..	..	5	5	..	..	3	2	..	..	7	3	..	..	7	6	..	..	3	4	1	..	3	1	..	..
Carbuncle	7	3	2	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	1	..	..	2	1	..	..	..	..	1	..
Onychia	2	2	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Paronychia	3	2	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ingrowing Toe Nail	27	21	6	..	..	..	..	..	..	..	..	..	..	16	1	..	..	5	4	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sinus	13	7	6	..	..	..	..	..	..	1	..	..	..	1	3	..	..	1	..	..	..	2	1	..	..	2	2	..	..	..	..	..	..	..	..	..	..
Gangrene (*see* also Diseases of Vessels)	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Perforating Ulcer	4	3	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Moles and Warts	7	4	3	..	..	1	..	..	..	1	..	..	..	..	2	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Bunion	3	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..
Boils	3	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..
Œdema	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Injuries.																																					
Burns	36	18	10	4	4	6	1	3	1	3	4	1	..	2	1	..	..	2	1	..	1	2	..	..	..	1	..	..	1	..	..	..	1	2	3	..	..
Scalds	28	15	11	..	2	7	6	..	2	3	1	..	..	3	3	..	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dog Bites	2	1	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Contusions	18	10	8	..	..	..	2	..	..	3	1	..	..	4	..	..	..	..	1	..	..	2	1	..	..	..	2	..	..	1	..	..	..	..	1	..	..
Injuries of Head—																																					
Wounds—																																					
Scalp	67	52	13	2	..	2	..	..	..	7	2	..	..	11	..	..	..	7	..	..	..	10	3	2	..	9	5	..	..	5	2	..	..	1	1	..	..
Fractures of Skull—																																					
Vault Simple	4	2	1	1	..	..	..	..	..	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
„ Compound	10	7	2	1	..	..	..	..	..	2	..	..	..	1	..	..	..	3	1	..	..	1	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..
Base	11	..	2	9	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1	4	..	..	..	2	..	..	1	..	..	..	..	..	..
Concussion	73	57	11	5	..	4	4	..	..	9	3	..	..	23	3	..	..	8	..	1	..	6	1	3	..	3	..	1	..	1	..	..	..	3	..	..	..
Gunshot Wound	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Contusions	6	6	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..
Injuries of Face—																																					
Contusions	4	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Wounds	45	35	10	..	..	4	3	..	..	8	1	..	..	6	..	..	..	8	1	..	..	3	..	..	..	2	4	..	..	2	1	..	..	2	..	..	..
Fractures—																																					
Lower Jaw	8	4	3	1	..	..	..	..	..	1	2	..	..	1	..	..	..	1	1	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..
Upper Jaw	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nasal Bones	3	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Injuries of Face (continued)—																																					
Explosion of Gunpowder in Mouth	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Gunshot Wound	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Injuries of Eye—																																					
Contusions	13	9	4	..	..	..	..	..	..	1	1	..	..	6	1	..	..	1	2	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wounds	8	6	2	..	..	..	..	..	..	..	1	..	..	4	..	..	..	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Lime Burn	3	3	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Molten Lead	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Foreign Bodies	4	3	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ruptured Globe	3	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..
Injuries of Nerves—																																					
Wound	4	4	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Injuries of Neck—																																					
Wounds	6	5	1	..	..	..	..	..	..	1	..	..	..	1	1	..	..	1	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..
„ Suicidal	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..
Scald of Glottis	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gunshot Wound	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stricture of Œsophagus after swallowing Acids	3	1	1	1	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Contusions	4	4	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Injuries of Back—																																			
Contusions	16	13	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	1	..	..	6	..	..	..	2	1	..	..	..	..	..	..	..	1	..	..
Sprains	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fracture of Spine	2	1	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Concussion of Spine	3	2	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Injuries of Chest—																																			
Contusions	13	11	2	..	..	..	..	..	..	1	..	..	..	1	..	..	..	5	1	..	..	..	1	..	..	2	..	..	..	..	..	..	2	..	..	..
Fractured Ribs and Sternum	34	16	15	2	1	..	..	..	..	2	..	..	..	..	1	..	1	1	..	..	..	4	6	..	..	5	1	..	..	2	3	..	..	2	4	2	..
,, with injury to Viscera	3	2	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Nut impacted in Bronchus	1	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wounds	5	3	..	2	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Injuries of Abdomen—																																			
Contusions	16	13	3	..	..	..	1	..	..	..	..	..	..	8	1	..	..	3	..	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
,, with Rupture of Viscera	4	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Wounds—																																			
,, Non-penetrating	2	2	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
,, Penetrating	2	..	..	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Injuries of Pelvis and Genitals—																																			
Contusions	4	2	2	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wounds	2	2	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ruptured Urethra	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fracture	5	2	1	2	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	1	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..
Foreign Body in Urethra	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Injuries of the Upper Extremity—																																			
Wound and Contusions—																																			
Of Arm	15	10	4	1	..	..	..	..	..	..	..	..	..	7	..	..	..	..	..	..	..	2	2	..	..	1	..	..	..	1	1	..	..	1	..		
Of Forearm	19	13	6	..	..	..	..	..	..	..	..	..	..	3	1	..	..	1	2	..	..	5	3	..	..	4	..	..	..	..	..	..	..	..	..		
Of Hand	41	35	6	..	..	..	..	..	..	2	..	..	..	12	2	..	..	8	2	..	..	4	2	..	..	7	..	..	..	2	..	..	..	..	..		
Needle in Hand	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
Fracture of—																																			
Clavicle and Scapula	10	7	3	..	..	..	..	..	..	..	..	..	..	1	1	..	..	1	..	..	..	1	1	..	..	1	..	..	..	3	1	..	..	..	..		
Humerus—																																			
Simple	12	9	3	..	..	..	..	..	..	2	1	..	..	4	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	2		
Compound	6	5	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	2	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..		
Forearm—																																			
Simple	7	5	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	2	..	..	1	..		
Compound	5	3	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	..	..	1	1	..	..	..	..	..	..	..	..		
Hand	2	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
Ununited	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..		
Sprains	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..		
Dislocations of—																																			
Clavicle	1	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
Shoulder	9	3	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	..	..	..	1	..	..	..	5	..		
Elbow	1	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
Radius	2	1	1	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		
Thumb	2	1	1	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..		

TABLE I (*continued*).

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Injuries of Lower Extremity—																																			
Contusions	34	27	7	..	..	..	1	..	..	1	..	..	..	10	2	..	..	8	2	..	..	3	..	..	..	2	..	..	..	2	1	..	..	1	1	..	..
Wounds—																																			
Thigh	15	14	1	..	..	..	.	..	..	..	1	..	..	8	..	..	..	..	..	..	..	4	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..
Knee-joint	2	..	..	2	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Over Knee	16	12	4	..	..	..	1	..	..	1	1	.	.	4	..	..	..	2	..	..	..	1	2	..	..	3	..	..	..	1	..	..	..	..	..	..	..
Leg	18	15	2	1	..	.	..	..	..	2	..	..	..	5	2	..	..	1	..	..	..	5	..	..	..	2	..	..	..	..	..	..	..	..	..	1	..
Foot	19	16	2	1	..	..	..	..	..	1	..	..	..	4	1	.	..	5	1	..	..	3	..	..	..	3	..	1	..	.	..	..	..	..	..	..	..
Bullet Wound	1	1	..	..	..	.	.	.	.	.	.	.	.	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sprained Ankle	20	15	5	..	..	..	..	..	..	..	..	..	..	1	..	..	..	3	3	..	..	3	1	..	..	3	1	..	..	3	..	..	..	2	..	..	..
Lead Pencil in Thigh	1	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fracture of Femur—																																			
Simple	81	63	16	1	1	11	9	..	..	7	1	..	..	13	1	..	..	6	..	1	..	7	..	..	..	8	1	.	..	5	1	..	..	6	3	..	1
Compound	6	2	..	2	2	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	1	..
Fracture of Cervix Femoris—																																			
Intracapsular	9	2	5	1	1	..	..	..	..	..	..	..	..	..	..	.	..	..	..	..	..	..	1	..	..	.	..	..	..	..	1	..	..	2	3	1	1
Extracapsular	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..
Fracture of Patella	38	21	17	..	..	..	1	..	..	..	..	..	..	..	..	..	..	8	3	..	..	4	3	..	..	6	2	..	..	1	7	..	..	2	1	..	..
Fracture of both Bones of Leg—																																			
Simple	137	114	22	..	1	..	1	..	..	6	..	..	..	12	..	..	..	17	..	..	..	26	3	..	..	32	4	..	..	14	6	..	..	7	8	..	1
Compound	15	6	3	6	..	1	..	..	..	.	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	2	2	2	..	2	..	2	..	..	1	1	..

Disease.	Total.	Discharged.		Died.		Under 5.				— 10.				— 20.				— 30.				— 40.				— 50.				— 60.				Over 60.			
						Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.		Discharged.		Died.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Injuries of Lower Extremity (contd).																																			
Fracture of Tibia—																																			
Simple	40	27	13	..	..	1	1	..	..	4	2	..	..	9	1	..	..	4	2	..	..	3	1	..	..	5	3	..	..	..	2	..	..	1	1	..	..
Compound	3	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..
Needle in Knee and Leg	6	..	6	..	..	..	2	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
Fracture of Fibula—																																			
Simple	63	56	7	..	..	1	..	..	..	..	..	..	..	11	..	..	..	10	4	..	..	9	..	..	..	17	2	..	..	3	..	..	..	5	1	..	..
Fracture of Bones of Foot—																																			
Simple	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Dislocations—																																			
Femur	1	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Patella	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Bones of Foot	2	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Old Fractures	8	5	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Diseases and Injuries not classified.																																			
Nihil	10	6	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
For Instruments	83	41	42	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Old Injuries	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wounds of Arteries	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..

ABSTRACT OF TABLE I,

With Average Duration of Surgical Patients in the Hospital.

Discharged Cured or Relieved	M. = 2,460	
	F. = 1,432	
Died	M. = 141	
	F. = 71	
Remaining in at the end of the year 1882*	M. = 220	
	F. = 131	
Average stay of Men	29·26 days.	
„ Women	30·16 „	

Average stay in the Hospital of all Surgical Patients = 29·71 days.

* These cases are not included in Table I.

APPENDIX TO TABLE I.

GENERAL DISEASES.

Hysteria.—Six women were treated in the Surgical Wards for "hysterical affections." One, aged 28, suffered from abdominal pulsation; another, aged 22, had an abdominal phantom tumour. A girl, aged 19, had for some months walked stooping forwards—she was relieved by a pair of stays.

A woman, aged 28, about five months before admission, had stumbled in going down a step, and had since kept her right foot in the position of Talipes Varus. The foot relaxed under Chloroform, but reverted to its former position when the anæsthetic passed off.

A woman, aged 26, unmarried, with irregular menstruation, had noticed for two years that her breathing was attended with a whistling sound. The whistle was high pitched, and was loudest in expiration. It was not interrupted by opening the mouth; it ceased during sleep. She recovered after the tonsils had been Faradised.

Syphilis.—A woman, aged 29, with Primary Syphilis, died of an intercurrent attack of Pleurisy.

TUMOURS.

Carcinoma.

Breast.—Of 36 women, on whom an operation was performed, six underwent amputation of the Breast alone; in seven cases the tumour was removed, leaving the Breast, and in three of these Lymphatic Glands were also taken from the axilla. None of these cases died. Of the remaining 23 cases all suffered removal of the Breast and of Lymphatic Glands. Five of them died. One of these, aged 48, had disease of both Breasts. The left Breast with Lymphatic Glands and the tumour of the right Breast were removed. On the 10th day, whilst she was using the bed-pan, a Femoral Hernia, that had long been retained, came down on the right side. After 24 hours Strangulation Herniotomy was done, and the sac opened. She died three days later of Peritonitis, and at that time the Breast wounds were healing well.

Lip.—The disease affected the lower Lip in all cases. One man, aged 52, died under the influence of Chloroform before operation.

Sarcoma.

Breast—The disease was Cystic in all the cases. A large tumour of this nature in connection with the left Breast of a man, aged 69, was removed, together with Sarcomatous glands from the axilla, which were also Cystic.

Fibroma—A mariner, aged 44, had developed numerous tumours during the six months before admission. They were for the most part on the limbs and were chiefly seated in the subcutaneous tissue. He had 42 in all, the largest was not quite the size of an egg, the majority were the size of filberts. A few were tender; none painful; some of them manifestly in connection with nerves. Several were removed, and proved to be Fibromata.

Papilloma of Larynx.—A woman, aged 35, had had increasing difficulty of breathing for 12 months. She said she was subject to asthmatical attacks, but her breathing, though stridulous, was not difficult. The Laryngoscope revealed a pale, greyish tumour below the Vocal Cords, on the left side of the Trachæa. On 4th October the Trachæa was opened above the Isthmus, but, as the growth was just within the incision, a second opening was made below the Isthmus and a tube introduced. The upper wound was enlarged downwards and the Isthmus divided, when it was found that the Papilloma could be scraped away with the nail and forceps. It extended from below the cricoid an inch down the Trachæa on the left side. She made a good recovery. (*See St. Barth. Hosp. Rep.*, vol. xviii., p. 129.)

Malformations.

Spina Bifida.—Two cases were treated by injection of Morton's fluid. A girl, aged 1½ years, had a tumour over the sacrum as large as a melon. It was injected once with ʒi of Morton's fluid. The tumour was thought to be smaller on leaving Hospital. A girl, aged 6 weeks, had a Spina Bifida of the Sacral Region of large size. The cyst was oval, pendulous, and flattened; it measured in length 10 inches and across 4½ inches. The skin over it was natural, except at the most dependent part, where it was reddened by inflammation. The base of attachment was 11 inches in circumference. The cyst was tapped, and injected with ʒi of Morton's fluid many times. The lower part of the cyst became apparently solid.

Diseases of Nervous System.

Two cases of Spastic Paraplegia were treated by stretching the Sciatic Nerves. A man, aged 40, whose disease had been progressive for six years, had the left nerve stretched on May 5, and the right nerve on June 5. He could walk well on leaving Hospital. The other case, a man aged 30, was not benefited by the stretching of the right Sciatic Nerve.

Diseases of Respiratory System.

Larynx.

Diphtheria and Croup.—All the cases included in the Surgical Report underwent Trachæotomy. Nine recovered and 21 died. A girl, aged 6, and a boy, aged 1¼, died on the table. A boy, aged 7 months, lived out the day of operation. Of the five boys who recovered, one was aged 18 months, one 2 years, two 3 years, and one 4½ years. Of the girls, one was 2 years old, two were 4, and one 9 years.

Paralysis of Larynx.—A labourer, aged 38, was admitted with Paralysis of Larynx. He had been subject to short breath for two years. He had previously coughed for two years. Inspiratory no expiratory dyspnœa. Venereal sore 20 years ago. Laryngotomy was performed, which afforded complete relief, and he left Hospital wearing a gutta-percha tube. (*See St. Bart. Hosp. Rep.*, vol. xviii., p. 125.)

Diseases of Circulatory System.

Aneurism.

Femoral.—This was a case of Tubular Aneurism, which affected the common Femoral Artery for two inches from Poupart's ligament downwards. It did not interfere with function, and was not treated.

Carotid.—A farm labourer, aged 59, came with an Aneurism as large as an orange in the right Carotid triangle. He had suffered with "beating" in the neck for 18 months, and had had the swelling for six weeks. He drank no stimulants, and gave no history of Syphilis. Inasmuch as the pulsation in the tumour was not completely arrested by pressure on the artery below, and as the Mitral Valve was diseased, he was not subjected to operation.

Popliteal.—Two cases of Popliteal Aneurism were treated by ligature of the artery—the other four by division of the artery between two ligatures.

A carman, aged 39, had an Aneurism in the right ham of three weeks' duration, which had been preceded for two months by cramp in the leg. He was a toper, but had not had Syphilis. On three occasions Digital Compression was tried for 11, 10, and 4 hours respectively, yet the Aneurism grew larger. The Femoral Artery was then ligatured with strong catgut, and a cure ensued.

A man, aged 39, came in for an œdematous swelling of the right foot and leg, which was found to be due to an aneurism in the ham of a few weeks' standing. He was addicted to spirits, but had not had Syphilis. For a period of 50 days various modifications of pressure were used without success. Digital and mechanical pressure, with occasional application of Martin's Bandages and Genu Flexion were among the means employed. The Femoral Artery at length was tied, and he made a good recovery.

A sawyer, aged 40, had had an Aneurism in the ham for six weeks. It was the size of a small orange. Esmarch's bandage was applied for two hours without result. Two days later the Femoral Artery was ligatured in Scarpa's triangle with kangaroo tendon in two places and divided between. The tumour pulsated feebly for ten days, but eventually was quite cured.

A man, aged 33, had fallen from a height 15 months before admission, and had noticed a throbbing in the Popliteal Space for a few days succeeding the accident. A tumour was found in the ham shortly before he came in. No Syphilitic history. The Femoral Artery was divided between two kangaroo tendon ligatures in Scarpa's triangle. Four days afterwards the foot and half the leg became affected with dry gangrene. A line of demarcation formed, and amputation of the thigh above the tumour was done on the 21st day. The Aneurism was found to be occluded.

An ironmoulder, aged 34, was the subject of Aneurism. He was a professional runner, whose distance ranged from 120 yards to a quarter of a mile. Eight years before admission he had noticed a "crackling" at the left knee, and found flexion of the joint somewhat interfered with, but not to such an extent as to prevent his training. A swelling gradually formed behind the knee, accompanied by pain. He complained that the range of motion was limited, but not that the limb was weaker than the other. He had an Aneurism as large as a cricket ball. The Femoral Artery was divided in Scarpa's triangle between two ligatures of Ox aorta. At the end of four months the Aneurism was cured.

A cabinet maker, aged 48, was a patient in the London Hospital in 1881 for Popliteal Aneurism, that had then existed 18 months. The Femoral Artery was tied there in Scarpa's triangle in February, 1881. In October of the same year he came to St. Bartholomew's with the Aneurism still present, and on the 22nd of that month the Femoral was divided in Hunter's canal, between two catgut ligatures. The pulse in the tumour was not abolished at the time of the operation, and he left the Hospital in the same condition, though with some diminution of the tumour. In February, 1882, as no cure had been effected, flexion of the knee was tried. On 17th May, the tumour being then as large as an orange, the Popliteal Artery was exposed in the ham, and divided between two catgut ligatures, about an inch above its entrance into the sac. On June 30 the tumour had shrunk considerably, and had no pulsation.

Nævus.—A man, aged 22, was the subject of a nevoid condition of the scalp, over the left side of the head behind the ear. The disease was said to have followed a blow three months before admission. On March 23 one-third of the diseased tissue was dissected away. On May 27 the remainder of the affected scalp, which measured 5½ square inches, was removed.

Gangrene.—One case was that of a stoker, aged 49, who had Gangrene of the left Great Toe. He had lost the anterior half of the right foot six years previously by the same disease. His work obliged him to stand sometimes for hours in water up to his ankles.

A man, aged 64, had Gangrene of the 2nd, 3rd, and 4th right toes of six weeks' duration. A corn on one of the toes had festered. He had passed large quantities of water for two years. On February 11, seven days after admission

he passed nine pints of urine. S. Gr. 1035, containing much sugar. On February 25th, he was passing five pints of urine. The Gangrene had then extended over the Metatarsal portion of the foot. On April 11th, he passed 2¾ pints of urine. He had a rigor, and the leg above the dead parts became inflamed. He fell into a drowsy state and died two days later.

Arterial Nævus.—A girl, aged 25, had burnt her left hand when she was 1½ years old by falling into the fire. The hand was larger than the other, and its temperature higher. The subcutaneous tissue of the hand was occupied by tortuous and dilated veins. The arteries of the fingers, hand, and forearm were much enlarged, their coats thin and their course tortuous. A continuous thrill was felt when the hand was lightly grasped; when closely grasped a strong arterial pulse was felt. Two sounds were heard on auscultation—a continuous hum and a systolic murmur. (*See Clin. Soc. Trans.*, vol. xv., p. 198.)

Diseases of the Digestive System.

Diseases of Intestines.

Intestinal Obstruction.—Of seven cases 5 were male and 2 female. Four men recovered after Colotomy. A boy, aged 3, recovered without operation. Abdominal section was done on a girl, aged 14.

A man, aged 47, became constipated eleven days before admission without having had previous trouble of that kind. On the fourteenth day of obstruction the Colon was opened in the left loin. Four days afterwards he died, and autopsy revealed a chronic ulcer of the Ileum with occlusion of the Ileo-cæcal valve. That orifice would just admit a large probe.

A man, aged 66, had pain in the abdomen and constipation eight days before admission. After vomiting for four days the colon was opened in the left loin, and he did well.

A basket maker, aged 55, suffered from languor for some days, and on 11th October had nausea. He vomited on 15th October. He passed no motion after 9th of that month. He vomited again on 17th October, and then an injection of three pints of olive oil was given. No success following that measure, the colon was opened in the left loin, and he made a good recovery.

A station master, aged 35, had had seven weeks of constipation before admission, which had been partially relieved by enemata. On March 2nd, his bowels acted after an injection. His belly became distended, and he vomited occasionally up to March 10th, when air was blown up the rectum with no result. On March 13th the ascending colon was opened and he recovered.

A boy, aged 3, after eating an apple four days before admission, was seized with vomiting and became constipated. His belly was distended, and he was much distressed. No blood or slime came from the bowels, and nothing was discovered by examination of the rectum. His temperature was natural. Was fed partly with nutrient suppositories. He did not vomit again till the fifth day after coming in. On that day 22 ounces of water were thrown up the rectum, which came back with the remains of the suppositories. Next day ʒxvj of olive oil were injected and returned. Tinc. opii ℥iij were given every 3 to 4 hours. On the thirteenth day of constipation he again vomited, and in the afternoon his bowels acted three times without solicitation. He had no further trouble.

One of the women, aged 48, had a history of obstruction for four months, which became acute four days before she entered the Hospital. The right colon was opened, but she died next day exhausted.

The other was a girl, aged 14. She complained of pain in the belly and vomited on March 2nd. She had two copious loose stools on March 4th. She began to pass pure mucus by the rectum on March 8th. Two more passages of mucus occurred on March 10th. A Tumour was then felt in the left iliac region, which from its shape was suspected to be an intussusception. The abdomen was opened under spray, but no obstruction was found. The Tumour in the left lumbar and iliac regions was an abscess beneath the peritoneum. She died in two days of Peritonitis.

Intussusception.— A girl, aged 3 months, had an attack of screaming 14 days before coming to the Hospital. She afterwards continued to pass blood per anum and to vomit. The abdomen became much distended on the tenth day of illness; on the thirteenth day the bowel appeared at the anus, and next day a portion of the intestine came away, including a piece of mesentery, in length 2½ inches. On the fifteenth day bowel again protruded, and next day became separated to the extent of 1½ to 2 inches. She recovered.

The other two cases, a girl, aged 8 months, and a boy, aged 7 months, terminated fatally after the abdomen had been opened and the intussusception had been reduced. Both died the day of operation.

Hernia.

Strangulated Inguinal.—All were men. Six cases yielded to Taxis. One of them, aged 55, had well marked symptoms for three days. Another, aged 45, had undergone Mr. Wood's operation for radical cure in 1864, and had worn a truss ever since. He had a Congenital Scrotal Hernia.

Of the eleven cases submitted to operation, both those in which the sac was not opened recovered, and two also after opening of the sac. In these four the longest period of strangulation was 18½ hours. Three of these men were under 22 years of age, and the other was aged 29.

A man, aged 27, had symptoms of strangulation on March 28th, with a tumour in the right groin. He came in on April 1st with urgent symptoms but no tumour—for it had been reduced by a surgeon before admission. Herniotomy was performed; the canal was empty. The peritoneum that presented at the inner ring was opened and found to be a hernial sac. The neck of the sac was reached with difficulty, and, after the stricture was divided there, reduction was effected. He died in two days of Peritonitis.

A man, aged 68, began to suffer symptoms of strangulation at 8 a.m. A surgeon used Taxis for one hour in the morning, and in the afternoon tried Taxis again for two hours. At that time he punctured the sac with a trocar. The patient had a large right scrotal hernia. The scrotum was œdematous, emphysematous, and ecchymosed. After 16 hours' strangulation the sac was opened, a rent was found in the bowel at one part as large as a threepenny piece. The edges of this rent were fastened to the sides of the wound. He died of Peritonitis six days later.

Strangulated Femoral.—Of the thirteen women, one, aged 45, after three days' strangulation was relieved by Taxis. In five cases the sac was not opened —two of these died of Bronchitis, and one, aged 41, who had had strangulation for six days, died of Peritonitis. Two recovered—one of these, aged 42, two days after the operation bled, so that it was necessary to enlarge the wound upwards under Chloroform. Next day she was found to be in a very despondent state, and three days later fell into a kind of cataleptic state. She became pale and her features pinched, her limbs were stiff, and when raised they remained for a time in the same position. She did not speak, and lay with her eyes closed. She refused food and was fed by enemata. After 14 days she began to talk and then had delusions, said she had no tongue and no stomach; she was frequently violent. The wound healed perfectly and she at length became sane.

Hernia of Ovarian Cyst.—A woman, aged 29, had a small Cyst in the canal of Nuck, which was partly solid; it was removed by operation and was considered to be in origin ovarian.

Diseases of the Rectum.

Hæmorrhoids.—A man, aged 65, with sloughing piles died. The large intestine from a foot below the Ileo-cæcal valve to the anus was studded with ulcers of irregular form and size and variable depth.

Diseases of Urinary System.

Pyelitis.—A blacksmith, aged 35, had suffered with symptoms of this disease for three years. An attempt was ultimately made to remove his right kidney.

Part was taken away, but the bulk of it was bound down by tough fibrous tissue, and could not be separated. The disease was consequent on obstruction of the ureter from the contraction of the scar of an ulcer. (*Clin. Soc. Trans.*, vol. xv., page 140.)

Hydro Nephrosis.—In a boy, aged 17. (*See Trans. of Internat. Med. Cong.*, 1881, vol. ii., p. 264).

Foreign Body in Urethra.—A man, aged 72, unable to pass water, was found to have a piece of leaden tubing in his urethra 4½ inches long, and flattened out. It was easily extracted.

Diseases of the Generative System.

Female—Ovary.—Of 18 cases, one was not treated, two were relieved by Paracentesis, 13 recovered after Ovariotomy. One woman, aged 43, died of Peritonitis after the operation. Another woman, aged 57, died in the evening of the day of operation of bleeding. The right ovarian artery was found to have escaped inclusion in the ligature, and to be lying free beneath the Peritoneum.

Diseases of Organs of Locomotion.

Periosteum.—A school boy, aged 14, had been taken ill seven weeks before admission with a painful swelling of the thigh. A fortnight after he was laid up an incision was made on the outer side of the limb below the Trochanter. This opening was found to communicate with necrosed bone. He came to the Hospital in a state of exhaustion from pain and bed sores. He lay on his right side with his legs drawn up. At the end of a month he died of Pyæmia. The wound in the thigh was found to lead to a necrosed portion of the shaft of the left femur as large as a florin, three inches below the anterior inter-trochanteric line. From this bare spot a track, that would just admit a probe, passed upwards between the bone and periosteum to the hip joint. That articulation was so far destroyed that the bony surfaces were denuded of cartilage and the ligamentum teres absorbed. The other hip was found to have undergone spontaneous dislocation. The head of the femur rested on the Ischium, near the great sciatic notch, but did not encroach upon it. The acetabulum was full of brown pus, and the remains of the ligamentum teres lay at the bottom of that cavity. The head of the femur was partly denuded of cartilage, but the acetabulum had lost none.

Diseases of Joints.

Chronic Disease.—Among 75 cases of Hip Disease two girls, aged 5 and 7, died of Tubercular Meningitis. Two boys, aged 1 and 13, died of exhaustion. A man, aged 23, and a girl, aged 17, died with Lardaceous disease of the viscera; and a woman, aged 21, of acute Peritonitis.

A woman, aged 30, was admitted with chronic disease of the knee, that had followed parturition five months before. The joint became tense with fluid and on February 10 aspiration was done under spray. The operation was repeated on March 31, and ʒiij of sero-fibrinous fluid were drawn off. The inflammation became more acute, and on April 23 it was deemed advisable to incise the joint freely on each side. Suppuration afterwards ensued up and down the limb. Her strength failed, and she had bed sores. On May 26 amputation was done through the thigh. The wound did well, but on June 1 she miscarried of a dead fœtus and died.

Diseases of Spine.

Angular Curvature.—Two of these cases were complicated with Paraplegia.

Diseases of the Cutaneous System.

Anthrax.—Four men and three women were under treatment.

One girl, aged 16, had a carbuncle of the lip. The disease began three days before admission at the right angle of the mouth. She had high fever. The part was freely incised. On the next day the swelling reached the eye. She fell into a Typhoid condition, and died on the eighth day of the disease.

A man, aged 54, had a carbuncle over the left scapula. He had Polyuria, but no sugar was found in his water. He recovered.

A man, aged 62, had a carbuncle of the nape, and later one on the right side of the abdomen, of which he died. He had Diabetes Mellitus.

A man, aged 53, had a carbuncle in the middle of his back of large size. It was 13 inches from above downwards, and 8 inches from side to side. The slough was two inches deep in the centre. He had no sugar in his water, and made a good recovery.

Mole.—A boy, aged 2, had an extensive hairy Mole. It affected the skin of the back below the level of the fifth dorsal vertebra, and descended over the buttocks to the middle of the thighs. It embraced the flanks and covered the lower part of the abdomen below the umbilicus and the front of the thighs.

INJURIES.

Burns—A boy, aged 2, suffered a burn of the third degree of the left arm and side of the face; on the 13th day he had Trismus; on the 15th day Opisthotonos, and the muscles of his neck and abdomen became tense; on the 17th day he had general spasms. He was treated with Opium in frequent doses. On the 24th day he began to improve, and at the end of another month all symptoms of Tetanus had departed.

A girl, aged 19, burnt on the back and buttocks, contracted Variola, after lying for 22 days in the Hospital.

Head.—Scalp Wound.—A youth, aged 17, suffered a small wound just above the right external angular process of the frontal bone three weeks before admission. It did not expose the bone. Two days before he came in he had twitchings of the left hand and side of the face. The day before admission he had lost power in the left arm. He walked into the ward, but on getting to bed at once became unconscious. The wound was inflamed and puffy. He had twitchings of the left eyelid, side of the face, and upper extremity; there was rigidity of the left leg. At and after 11 a.m. he had three attacks of general epileptiform convulsions. At noon he became conscious. At 2 p.m. the wound was enlarged and the trephine set on. The dura mater bulged into the opening; it was incised. The exposed brain looked healthy. In the evening the left side of the face was paralysed; he was quite conscious. Up to the 12th day he was suffering from indefinite symptoms of compression. On that day ʒss of pus escaped from the wound in the skull. On the 20th day from the operation there was Hernia-Cerebri. The left hand was weak. He was quite rational. Forty-three days after operation there was still hernia with loss of substance continuing. The left arm and leg were paralysed. Three months after admission the hernia was the size of half a walnut, red, fleshy, not healing. The paralysis had almost passed off, power having returned first in the leg and then in the arm.

FRACTURE OF THE SKULL.

Vault.

Simple—A man, aged 64, fell from his cab, on August 23rd. He showed no bruise or cut; he was conscious but drowsy. On September 2nd he had involuntary evacuations and was drowsy. He sat up on September 4th; next day he became comatose and died. A fissured fracture of the left parietal region was found which had lacerated the posterior branch of the middle meningeal artery. There was a large blood clot in the arachnoid cavity. It had apparently been formed at two separate dates; the bulk of it was compact and not recent, but near the rent in the vessel was a portion of fresh clot. He was the subject of Ostitis Deformans of the left Femur.

Compound.—There were eight men and two women.

The women had fractures of the parietal region without symptoms. In one case there was depression of the fragments.

Four men had fracture of the frontal bone, two of the parietal, and one of the occipital. There were no head symptoms in these cases, and in only one was there depression of fragments. The fatal case, aged 38, had a compound fracture of the vertex, together with a fracture of the base of the skull.

Gunshot Wound of Head.—A man, aged 18, was shot in the middle of the forehead with a saloon rifle. He was trephined, but the bullet was not reached. After death, on the fifth day, the bullet was found at the back of the skull, and had traversed the left hemisphere from front to back above the level of the lateral ventricle.

A man, aged 35, shot himself with a revolver in the forehead. He died of Vertical Meningitis on the 10th day. The bullet passed through the left frontal sinus and through the cribriform plate of the ethmoid bone to the back of the middle fossa of the nose where it was impacted. A piece of bone had been driven into the left anterior cerebral lobe.

Injuries of the Face.

Pistol Shot Wound of Face—A gilder, aged 42, who had had a quarrel of some years with his brother-in-law on money matters, was shot by him from a distance of 4 feet with a revolver. The bullet entered close to the right ala of the nose, passed into the mouth near the second right upper molar, and then penetrated the antrum. The bullet was removed, and he recovered in three weeks.

A man, aged 56, who had already made an unsuccessful attempt to destroy himself, came up from Brighton to escape interference. He stood on the steps of entrance to the Hospital, filled his mouth with gunpowder and set fire to it. The mouth was much burnt, the soft palate was lacerated and almost altogether detached. He lived a day and died in asphyxia.

Injuries of Nerves,

A man, aged 43, suffered a wound below the inner condyle of the right Humerus, which resulted in loss of power and sensation in the parts below supplied by the Ulnar nerve. He could not even stir the index of the Dynamometer. The nerve was exposed behind the elbow, the ends were freshened and united with 4 horsehair sutures. When he left the ward sensation was completely restored, and he could compress the Dynamometer to 20 kilos.

A student, aged 18, had divided the Ulnar nerve 7 months before, near the pisiform bone, by putting his hand through a window pane. The same operation was done as in the previous case, and he went out with sensation perfect in the hands and with power much improved.

Injuries of Neck.

A printer, aged 29, swallowed accidentally a little Nitric acid nine weeks before admission. He had a stricture at the middle of the Œsophagus and one at each end of that tube.

A girl, after some trouble with her lover, drank ʒj of a solution of Sulphuric acid. She had slight stricture of the Œsophagus, which, like the previous case, was treated with bougies.

A boy, aged 2, drank some solution of Caustic Potash, on November 19th, 1881. A stricture of the Œsophagus ensued which was treated with bougies up to June 24th, when the difficulty of feeding him had become so great that Gastrostomy was performed. The operation of stitching the stomach to the abdominal wall was first done, and four days later the stomach was opened. He was very weak before the operation and died exhausted on the 11th day. The stricture was opposite the 3rd dorsal vertebra.

Injuries of Chest.

A boy, aged 5, was said to have inhaled a piece of a pea or monkey nut on August 25th. Admitted suffering from considerable dyspnœa. His trachæa was opened and he was inverted. No foreign body was ejected or felt on probing the trachæa. No relief to dyspnœa followed operation. Four days after the accident he died. On autopsy a nut was found, 1 in. long and ¼ in. wide, just above the bifurcation of the trachæa. The nut was swollen and bathed in pus. It had ulcerated through the trachæa just above the right bronchus at the outer and posterior part of the tube. It was contained in a pouch, formed partly of indurated connective tissue, which held the greater

part of the nut, but, on account of swelling, a considerable portion projected into the trachæa, and almost completely closed the upper opening of the right bronchus. The bronchus entered a large abscess in the right lung.

On August 4th a man, aged 40, fell on an iron spike, which entered the right side of the chest between the 8th and 9th ribs in the posterior axillary line. The finger passed into the pleural cavity. He had no dyspnœa. On August 6th his breathing became difficult, and he had much pain in the side. On August 22nd he was doing well, and eat a good tea, and said he thought he was getting well. He then used the bed pan, and immediately afterwards bled from the wound and died in a few minutes. The lung was found collapsed, and the cavity of the Pleura filled with recent blood clot. The 7th, 8th, and 9th ribs were comminuted, and their ends necrosed. An intercostal artery between the 8th and 9th ribs had ulcerated and bled.

A boy, aged 13, was stabbed by a companion with a penknife in the 4th left intercostal space, ½ inch internal to and below the nipple, on December 15th, 1881. He was collapsed and unconscious on admission. He rallied, but remained in a precarious state till January 7th, when physical signs of fluid in the left chest were increasing so much that he was tapped, and ℥xxvij of bloody serum let out. He died next day. There was a cicatrix in the parietal Pericardium, corresponding in position and extent to the scar on the chest. There was a dark spot near the apex of the heart, as if from a wound, and a blood clot, partly decolorised, was free in the Pericardium, near the apex. The left pleural cavity was full of bloody serum.

Injuries of Abdomen.

Contusion with Rupture of Viscera.—A man, with ruptured bladder, died in a few hours after being run over by a tram car.

A man, aged 25, was kicked by a horse in the belly. He died three days later of Peritonitis. There was a small rent in the Ileum that would admit a pencil, 4 feet from the Ileo-cæcal Valve, near the attachment of the Mesentery.

Wounds.—A rivetter, aged 29, was stabbed in the abdomen at midnight in a drunken brawl. He had a wound 1 inch long, about 1½ inches above the navel. A small piece of Omentum protruded. The Omentum was returned, and the wound sutured. Next day, after much pain in the night, the wound was opened and enlarged—the omentum more fully returned. The sutures were passed through all the layers of the abdominal wall. He died next day of Peritonitis.

Injuries of Lower Extremity.

Compound Fracture of Femur.—Of six Compound Fractures of the Femur, three died on the day of admission, and one the day after.

A boy, aged 16, did uninterruptedly well.

A man, aged 33, with a compound fracture into the knee, underwent secondary amputation of the thigh on the 30th day, and recovered.

Simple Fracture of the Leg.—A woman, aged 72, died five days after a comminuted fracture of both legs from Gangrene.

Wounds of Arteries.—A boy, aged 15, suffered a wound ¾ inch long with a pointed butcher's knife over Hunter's canal. There was a swelling just below the wound, over which a whirring systolic murmur was heard. A pad and bandage were applied. On the third day the wound was opened up, and the Femoral Artery was found to have been cut transversely half way through. A ligature was applied at each side of the wound, and the vessel divided between. He did well.

SURGICAL OPERATIONS PERFORMED.

OPERATIONS.	AGE AND SEX.																					
	Under 5 Years.		5—		10—		20—		30—		40—		50—		60—		70—		Total.		Discharged.		Died.	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Operations on the Eye.																								
Strabismus	1	3	13	8	10	14	..	1	..	1	..	..	..	..	..	..	..	..	24	27	24	27	..	..
Iridectomy	1	..	1	..	4	1	..	2	2	3	..	4	4	1	4	4	..	..	16	15	16	15	..	..
Cataract–Suction Operation	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	1	1	1	1	..	..
Linear Extraction	..	..	..	1	..	..	1	..	1	1	4	1	7	3	8	4	2	1	23	11	23	11	..	..
Flap Extraction..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	..	..
Needle Operation	1	..	1	..	3	..	..	1	..	..	1	1	..	..	..	..	..	..	6	2	6	2	..	..
Abscission	..	1	1	1	1	2	..	..	..	..	1	..	..	..	..	..	..	..	3	4	3	4	..	..
Extirpation of Globe ..	..	1	..	..	1	..	2	1	2	2	4	2	1	3	3	2	..	..	13	11	13	11	..	..
Entropion and Ectropion..	..	..	..	1	1	2	..	2	..	..	2	..	..	1	..	..	..	..	3	6	3	6	..	..
Anterior chamber tapped..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..
Tattooing of Cornea ..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	..	..
Slitting the Canaliculus ..	..	..	..	..	1	1	..	1	..	2	1	..	..	..	..	..	..	..	2	4	2	4	..	..
Removal of Capsule ..	..	..	..	..	1	..	..	..	..	..	..	1	1	..	3	1	..	..	5	2	5	2	..	..
Sclerotomy	..	..	..	..	..	..	..	..	..	1	..	..	..	..	1	2	..	..	1	3	1	3	..	..
Excision of Joints and Bones.																								
Knee	..	..	1	1	2	1	..	..	..	..	..	..	..	..	..	..	..	..	3	2	3	2	..	..
Wrist	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..
Hip	1	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	1	3	1	..	..

OPERATIONS.	AGE AND SEX.																							
	Under 5 Years.		5—		10—		20—		30—		40—		50—		60—		70—		Total.		Discharged.		Died.	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Excision of Joints and Bones (*continued*).																								
Shoulder	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	..	..
Elbow	..	..	1	..	..	1	..	..	1	..	..	1	..	..	..	..	..	..	2	2	1	2	1	..
Os Calcis	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..
Removal of Sequestra:																								
From Head and Face ..	..	1	2	..	..	..	1	1	..	1	..	..	..	..	..	..	..	..	3	3	3	3	..	..
„ Upper Extremity	..	..	..	..	2	..	..	1	1	..	..	..	..	..	..	..	..	..	3	1	3	1	..	..
„ Lower „	..	..	1	..	4	3	3	1	..	..	3	1	..	..	..	..	..	..	11	5	9	5	2	..
Amputations.																								
Primary—																								
Arm	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..
Forearm	..	..	..	..	1	..	..	..	..	..	2	..	..	..	..	..	..	..	3	..	3	..	..	..
Parts of Hand	..	..	..	..	..	Many	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Thigh	..	..	..	1	..	..	..	..	..	..	1	..	1	..	..	..	..	..	2	1	..	..	2	1
Leg	..	..	..	..	..	..	..	..	..	..	3	..	1	..	..	..	..	..	4	..	2	..	2	..
Ankle	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	..	..
Parts of Foot	..	..	..	..	..	..	..	Many	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Secondary—																								
Thigh	..	..	1	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	3	..	1	..	2	..
Leg	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..

OPERATIONS.	AGE AND SEX.																							
	Under 5 Years.		5—		10—		20—		30—		40—		50—		60—		70—		Total.		Discharged.		Died.	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Amputations (*continued*).																								
For Disease:																								
Arm	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	1	..	..
Forearm	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	2	..	2	..	..
Hip	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	1	..
Thigh	..	..	2	..	1	..	4	2	1	..	2	1	1	..	1	..	..	..	..	..	12	3	11	2	1	1
Knee Joint	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..
Leg	..	..	..	..	..	..	..	2	..	..	2	..	..	..	1	..	..	..	..	..	3	2	3	2	..	..
Ankle Joint	..	..	..	..	1	..	1	1	2	..	1	..	2	..	..	..	..	..	..	..	7	1	6	1	1	..
Removal of Tumours.																								
Cancer:																								
Mouth	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	2	..	1	..	1	..
Tongue	..	..	..	..	..	..	..	..	..	..	4	..	4	3	4	..	..	..	12	3	9	3	3	..
Lip	..	..	..	..	..	..	..	..	1	..	2	..	2	..	1	..	..	..	6	..	6	..	..	..
Face	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..
Breast	..	..	..	..	..	..	..	3	..	6	..	13	..	8	..	5	..	1	..	36	..	32	..	4
Penis and Scrotum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	2	..	3	..	2	..	1	..
Skin	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	2	..	2	..	..	..
Rectum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..
Recurrent	..	..	..	..	..	..	..	..	..	3	..	2	1	2	1	..	..	..	2	7	2	5	..	2
Lupus	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..
Rodent Ulcer	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	1	..	..	..

OPERATIONS.	AGE AND SEX.																					
	Under 5 Years.		5—		10—		20—		30—		40—		50—		60—		70—		Total.		Discharged.		Died.	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Removal of Tumours (*continued*).																								
Connective Tissue Tumours:																								
Sarcoma	..	1	..	1	3	2	2	..	2	..	2	4	..	6	1	2	..	1	10	17	10	17	..	..
Fibroma	..	1	..	..	..	3	5	5	..	3	1	4	..	1	..	..	..	..	6	17	6	17	..	..
Lipoma	..	..	..	..	..	..	1	1	2	..	..	3	1	..	1	1	..	1	5	6	5	6	..	..
Osteoma	..	..	1	..	4	4	1	3	..	..	..	..	..	..	..	..	..	..	6	7	6	7	..	..
Enchondroma ..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	1	..	..
Papilloma	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	1	2	1	2	..	..
Cysts —																								
Sebaceous	..	1	..	2	4	1	5	6	6	1	1	..	2	..	2	..	..	1	20	12	20	12	..	..
Dermoid	..	2	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	3	1	3	..	..
Simple	..	..	..	..	..	..	..	3	..	1	..	2	..	1	..	..	..	..	..	7	..	7	..	..
Removal of—																								
Upper Jaw	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1	..	3	..	1	..	2	..
Penis	..	..	..	..	..	..	1	..	..	..	2	..	..	..	2	..	..	..	5	..	5	..	..	..
Testis	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..
Adenoid Tumours:																								
Breast	..	..	..	..	..	1	..	3	..	3	..	..	..	..	..	..	..	..	..	7	..	7	..	..
Parotid Gland ..	..	..	..	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	1	1	1	1	..	..
Enlarged Gland	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..

F

OPERATIONS.	AGE AND SEX.																							
	Under 5 Years.		5—		10—		20—		30—		40—		50—		60—		70—		Total.		Discharged.		Died.	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Removal of Calculi.																								
By Lithotomy—Lateral	1	..	2	..	3	..	..	..	..	..	1	..	..	..	..	..	..	..	7	..	7	..	..	..
Litholapaxy	..	..	..	..	..	..	1	..	1	..	..	..	..	..	3	..	..	..	5	..	4	..	1	..
Incisions.																								
Gastrostomy	1	..	..	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	4	..	..	..	4	..
Colotomy	..	..	..	..	..	..	..	..	2	..	1	1	1	..	2	..	..	1	6	2	3	..	3	2
Ovariotomy	..	..	..	..	..	1	..	8	..	3	..	1	..	1	..	1	..	..	..	15	..	13	..	2
Abdominal section ..	1	1	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	1	4	..	..	1	4
Extirpation of Uterus ..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	2	..	..	..	2
Nephrotomy	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	2	..	1	..	1	..
For Hernia:																								
Inguinal:																								
Herniotomy—																								
Opening of Sac	..	..	..	..	..	..	4	..	1	..	2	..	1	..	1	..	..	..	9	..	2	..	7	..
Without opening of Sac ..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	..	..
Femoral:																								
Herniotomy—																								
Opening of Sac	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	2	..	2	..	8	..	4	..	4
Without opening of Sac ..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	2	..	5	..	2	..	3
Umbilical	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	1

OPERATIONS.	AGE AND SEX.																					
	Under 5 Years.		5—		10—		20—		30—		40—		50—		60—		70—		Total.		Discharged.		Died.	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
INCISIONS (*continued*).																								
Hæmorrhoids—																								
By Excision or Ligature	..	..	..	..	1	..	3	2	6	4	..	1	..	..	..	1	..	..	10	8	10	8	..	..
Anal Fistula	..	..	1	..	3	..	6	6	6	1	1	..	8	..	..	..	..	..	25	7	25	7	..	..
Fissure of the Anus ..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	2	..	2	..	..	..
Ulcer of Rectum	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	2	..	2	..	..	..
Trachæotomy	16	11	1	3	..	..	1	..	..	1	..	..	..	..	..	..	..	..	18	15	6	5	12	10
Laryngotomy	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..
Osteotomy	..	2	3	2	6	3	2	..	..	..	..	..	..	..	..	..	..	..	11	7	11	7	..	..
LIGATURE OF VESSELS.																								
Popliteal Artery	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..
Femoral Artery	..	..	..	..	1	..	..	..	4	..	1	..	..	..	..	..	..	..	6	..	6	..	..	..
Ulnar Artery	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..		
Radial Artery	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..
MISCELLANEOUS OPERATIONS																								
Deviation of Septum Nasi	..	..	..	..	3	1	1	..	..	..	..	..	..	..	..	..	..	..	4	1	4	1	..	..
Gouging of Bone.. ..	..	..	..	..	1	1	3	2	1	..	1	..	1	..	..	..	..	..	7	3	7	3	..	..
Exploratory Operations ..	..	..	..	..	1	2	1	..	2	..	1	..	..	..	..	..	..	..	5	2	5	2	..	..
Trephining	..	..	..	..	2	..	..	..	..	2	..	..	..	..	..	..	..	..	2	2	1	1	1	1
Paracentesis Abdominis ..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	2	..	2	..	..

OPERATIONS.	AGE AND SEX.																					
	Under 5 Years.		5—		10—		20—		30—		40—		50—		60—		70—		Total.		Discharged.		Died	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Miscellaneous Operations (*continued*)																								
Urethrotomy	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	2	..	2	..	..	..
Reamputation of Stumps	..	..	..	..	1	..	..	..	..	..	2	..	..	..	..	..	..	..	3	..	3	..	..	..
Nævus	3	4	1	..	3	2	1	..	..	..	..	..	..	..	1	..	..	..	9	6	9	6	..	..
Ingrowing Toe-nail ..	..	..	..	..	16	1	5	4	..	1	..	..	..	..	..	..	..	..	21	6	21	6	..	..
Compound Ganglion ..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..
Radical Cure of Spina Bifida	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	3	..	..
„ Hydrocele	..	..	..	..	9	..	2	..	2	..	..	..	..	..	..	..	..	..	13	..	13	..	..	..
Nerve Stretching.. ..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..	3	..	3	..	..	..
Removal of Cyst in Canal of Nuck..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..
Removal of part of Breast	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..
Removal of Calculi from Female Bladder ..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	2	..	..
Removal of Hair pin in Bladder..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..
Removal of Rectum ..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..
„ Tonsils ..	..	..	..	..	2	1	..	..	..	1	..	..	..	..	..	..	..	..	2	2	2	2	..	..
„ Warts, Polypi, &c. ..	..	..	..	..	1	1	..	4	2	1	..	..	2	..	..	..	..	..	5	6	5	6	..	..
„ Loose Cartilages ..	..	..	..	..	1	..	1	1	..	1	..	..	1	..	..	..	..	..	3	2	3	2	..	..
„ Bursæ ..	..	..	..	..	..	1	..	2	..	3	2	..	..	..	..	..	..	..	2	6	1	6	1	..
„ Bulbous Nerves in Stump	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..

OPERATIONS.	AGE AND SEX.																							
	Under 5 Years.		5—		10—		20—		30—		40—		50—		60—		70—		Total.		Discharged.		Died.	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Reparative Operations.																								
Harelip	6	8	1	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	7	10	7	10	..	..
Cleft Palate	3	2	3	3	4	2	1	1	..	..	..	..	..	..	..	..	..	..	11	8	11	8	..	..
Recto-vesical Fistula ..	..	..	.	..	1	..	..	..	..	..	..	..	..	..	..	.	..	..	1	..	1	..	..	..
Vesico-vaginal „ ..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	2	..	1	..	1
Ruptured Perinæum ..	..	..	..	..	.	1	..	4	..	1	..	..	..	..	..	..	..	..	..	6	..	6	..	..
Urinary Fistula	..	..	..	..	..	.	2	..	2	..	..	..	..	..	..	..	..	..	4	..	3	..	1	..
Prolapse of Uterus ..	..	..	..	..	..	.	..	1	..	..	..	..	..	..	..	1	..	..	..	2	..	2	..	..
Imperforate Anus ..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..
Reunion of divided Nerves ..	..	..	..	..	2	..	1	..	..	..	1	..	..	..	..	..	..	..	4	..	4	..	..	..
Deformity from Cicatrices ..	..	..	..	5	2	2	..	1	..	..	2	..	..	..	..	..	..	..	4	8	4	8	..	..

STATISTICS OF ANÆSTHETICS.

During the year 1882 Anæsthetics were administered 3,001 times.

Chloroform was administered	1,349	times.
Nitrous Oxide Gas (alone)	202	„
Ether (alone)	337	„
Ether, preceded by Nitrous Oxide Gas ..	1,076	„
Ethidene Dichloride	23	„
Methylene Bichloride	14	„
	3,001	

A man, aged 52, about to undergo removal of an Epithelioma of the lip, died whilst under the influence of Chloroform. When the struggling (which was excessive) ceased, the pulse was imperceptible, and after about six respirations the breathing stopped.

A woman, aged 21, very anæmic, with a weak pulse, died under the influence of Gas and Ether. The respiration and pulse stopped soon after the commencement of the administration. The post mortem examination showed pleuritic effusion on the right side, with displacement of the heart to the left. Large Hydatid Cysts of Liver and Uterus, and suppuration and dilatation of Ureters.

A man, aged 30, died of asphyxia, whilst under the influence of Chloroform, which was given for the setting of a double fracture of the jaw. Artificial respiration and Trachætomy were of no avail.

APPENDIX

TO

TABLE OF OPERATIONS.

AMPUTATIONS:

Primary—

Forearm.—A man, aged 48, suffered Amputation of the forearm and subsequently Amputation of the arm on account of destruction of the elbow joint.

Thigh.—A girl, aged 8, with Compound Fracture of both Femora and of one leg, died the same day.

A man, aged 44, had Epileptiform Convulsions, and died in 34 hours. The other man, aged 59, died on the 4th day of exhaustion.

Leg.—A man, aged 43, had Secondary Hæmorrhage on the 8th day. The flaps were opened, and the Posterior Tibial Artery was tied.

The two fatal cases died on the 3rd and 4th day respectively of exhaustion.

Foot.—In each case Pirogoff's Amputation was done.

Secondary—

Thigh.—A man, aged 33, suffered Amputation 38 days after Compound Fracture of the Femur into the Knee Joint.

A boy, aged 5, after wound of the Knee Joint underwent Amputation on the 13th day. The wound sloughed, he had Diarrhœa and became emaciated. A month after operation he developed head symptoms, resembling those of Meningitis. He died eight days later, but no disease of the Meninges was found.

Leg.—A man, aged 43, who had lately resigned the office of Hospital Beadle, a large, stout, saturnine person, was knocked down in Ludgate Hill, and suffered a Compound Fracture of the Leg. The limb became so much disorganised by inflammation that Amputation was done on the 15th day, and he died on the table.

Amputations for Disease—

Arm.—A woman, aged 57, had an intractable ulcer of the Forearm following a burn.

Forearm.—For disease of the Wrist Joint in both cases.

Hip.—In both cases for Morbus Coxæ. One, aged 13, died of exhaustion.

Thigh.—The women who recovered underwent Amputation for Sarcoma of the Femur. The fatal case died of Abortion after Amputation for Disease of the Knee. (See Appendix I.)

In seven males for Disease of the Knee, in two after failure of Excision of knee, in one for acute Periostitis of the Femur, involving the knee joint, and in one for Sarcoma of the Femur.

Leg—Males.—In two cases for Chronic Ulcer, and in one for Disease of the Ankle Joint. *Females.*—For Congenital Deformity of the Leg in one case, and for Disease of the Tarsus in the other.

Foot.—In all cases for Disease of the Tarsus. Chopart's operation was done in one case, and Syme's in the rest. The death was due to Phthisis Pulmonalis in a man, aged 33.

REMOVAL OF TUMOURS

Carcinoma—

Mouth.—A man, aged 49, died of Erysipelas after removal of a growth from the mouth.

Tongue.—Sedillot's operation was done in one case.

Scrotum.—A man, aged 79, had an Epithelioma removed from the Scrotum, and died two days after of weakness.

Breast.—One woman, who suffered removal of scirrhus from each breast, died after the operation for Strangulated Hernia. (See Appendix I.)

Removal of Upper Jaw.—A boy, aged 13, died of shock, seven hours after operation.

REMOVAL OF CALCULI:

Litholapaxy.—Bigelow's method was used in all these cases. A man, aged 62, died four days after operation with Surgical Kidneys.

Nephrotomy.—In a boy, aged 17 (see Transactions of the International Medical Congress, 1881, vol. ii. p. 264). A man, aged 35, died. (See Appendix I.)

INCISIONS:

Gastrostomy.—In three cases of Cancer of the Œsophagus, and in a boy, aged 2, for Stricture of Œsophagus from swallowing a solution of caustic potash. (See Appendix I.)

Abdominal Section.—In two cases for Intussusception. In a girl, aged 14, the Abdomen was opened, and Sarcoma of the Uterus and Ovaries was found. Partial removal was effected. A girl, aged 11, underwent the operation for obstruction. All these cases died of shock.

A woman, aged 31, was given an injection by the bowel the day before that fixed for an operation for Ruptured Perineum. The House Surgeon passed the enema tube through the wall of the Rectum and threw the injection into the Peritoneal Cavity. Abdominal Section was done next day, and the cavity sponged out, but the patient afterwards died of Peritonitis.

Removal of Uterus.—For Carcinoma of the Cervix in each case. In a woman, aged 34, the uterus and ovaries were removed through an incision in the abdominal wall. In the other case, aged 34, the parts were removed through the vagina.

Trachæotomy—Male.—In 16 cases for Diphtheria and Croup. In a boy, aged 5, for impaction of a monkey nut in the Trachæa. (See Appendix I.) In a man, aged 27, for Syphilitic Ulceration of the Throat. *Female.*—For Diphtheria in all cases but one—a woman, aged 35, whose Trachæa was opened for removal of a Papilloma. (See Appendix I.)

Laryngotomy.—For Paralysis of Larynx. (See Appendix I.)

Osteotomy—Males.—In six for Genu Valgum—in two for Ankylosis of Hip, in one for Ankylosis of Knee and in two for Ricketty Deformity of Tibiæ. *Females.*—In four for Genu Valgum, in one for Ankylosis of Hip, in one for deformity of Thigh after fracture. In a girl, aged 19, the Fibula was divided for Talipes Varus.

LIGATURE OF VESSELS:

Femoral Artery.—In all cases for Aneurism, except in a boy, aged 15, whose artery was tied in Hunter's canal four days after a punctured wound of the vessel.

Popliteal Artery.—In all cases for Aneurism. (See Appendix I.)

Ulnar Artery.—For Secondary Hæmorrhage 11 days after wound.

Radial Artery.—For Traumatic Aneurism.

MISCELLANEOUS OPERATIONS:

Bursæ.—A man, aged 45, died of Pyæmia, after removal of a Bursa over the Tuber Ischii.

REPARATIVE OPERATIONS:

Vesico-Vaginal Fistula.—A woman, aged 33, died 15 days after operation of Peritonitis. No opening in the Peritoneum was found at the seat of the operation.

SUB-TABLE, SHOWING THE NUMBER OF CASES OF ERYSIPELAS, PYÆMIA, &c.

DISEASES.	Under 5.		5—10.		10—20.		20—30.		30—40.		40—50.		50—60.		60—70.		70—80.		Total.		Deaths.	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Erysipelas—																						
Admissions	1	1	..	1	3	2	4	..	5	3	2	1	..	1	1	1	1	..	17	10	1	..
Occurring in Hospital	..	2	1	1	5	1	3	4	..	6	5	4	2	3	..	1	..	..	16	22	2	2
„ after Operations ..	..	..	..	..	5	1	6	..	1	3	2	3	..	1	..	..	..	..	14	8	2	3
Phlegmonous Inflammation—																						
Admissions	2	1	..	..	1	2	4	1	5	3	7	3	8	1	..	1	..	1	27	13	1	3
Occurring in Hospital	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..	..
„ after Operations.. ..	..	..	..	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	1	1	..	..
Pyæmia and Septicæmia—																						
Admissions	1	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	3	1	3	1
Occurring in Hospital	..	..	..	..	1	..	1	..	..	1	..	..	..	..	1	..	..	..	3	1	3	1
„ after Operations ..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	2	..	2	..
Tetanus—																						
Occurring in Hospital	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Delirium Tremens—																						
Occurring in Hospital	..	..	..	..	..	..	..	..	6	1	1	1	..	..	..	..	..	..	7	2	3	1

APPENDIX TO SUB-TABLE OF CASES OF ERYSIPELAS, &c.

ERYSIPELAS:

Admissions—

The apparent discrepancy between the number of cases in this and in the first Table, is due to the fact that several cases were admitted with Erysipelas complicating some other disease or some injury, and that such cases have been entered in the first Table under the heading of the Primary Disorder.

ERYSIPELAS OCCURRING IN HOSPITAL:

Male.—In 8 cases of Wounds. In one case of Compound, and in one of Simple Fracture of the Leg. In a case of Fracture of the Lower Jaw. In a case of Necrosis, and in one of Syphilitic Ulceration of Arm. It was fatal to a man, aged 41, after incision of an Ischio Rectal Abscess. It occurred in a case, aged 23, of Morbus Coxæ, that died long after of Lardaceous Disease.

A boy, aged 14, with acute Necrosis of the Femur, involving the Hip, had attack of Erysipelas which passed off, and he died of Pyæmia. (See Appendix I.)

Female.—Erysipelas Faciei occurred in three cases, viz., Stricture of the Rectum, Epistaxis, and Inflamed Bursa Patellæ. The last case, aged 53, proved fatal. In 9 cases it followed incision of abscesses. In 3 cases after incision near diseased joints. One of these a girl, aged 3, died of Meningitis after Erysipelas had passed off. In 2 cases after incision of cysts, and in 1 after incision over necrosed bone. It occurred the day after a digital examination of a Stricture of the Rectum, in a woman, aged 34. It arose before operation in a case of Fistula in Ano and in one of Sarcoma of Labium. It complicated a case of Compound Fracture of the Skull.

ERYSIPELAS AFTER OPERATION:

Male.—In 7 cases after operations on bone for Necrosis or Caries. In 2 cases of Amputation of the Thigh, and in one of Amputation of the Toe. In a case of Herniotomy and of Trachæotomy.

It was fatal after an operation for closing a Urinary Fistula, and after removal of an Epithelioma of the Mouth.

Female.—In a girl, aged 10, after Sequestrotomy for Necrosis of the Tibia. In the seven other cases it occurred after removal of Scirrhus Cancer of the Breast, and proved fatal in three of them.

PYÆMIA AND SEPTICÆMIA OCCURRING IN HOSPITAL:

Male.—In one case of Stricture of the Urethra, in a man, aged 28, after the bite of a dog; and in a boy, aged 14, with Acute Necrosis of the Femur. (See Appendix I.)

A woman, aged 36, admitted with Phlegmonous Inflammation, died of Pyæmia.

PYÆMIA AND SEPTICÆMIA AFTER OPERATIONS:

After removal of an Enlarged Bursa over Tuber Ischii, and after Amputation of the Thigh for disease of the Knee.

TABLE OF AMPUTATIONS WITH THE PERCENTAGE OF DEATHS DURING THE TEN YEARS *from* 1873 *to* 1882 *inclusive.*

OPERATIONS.	CASES UNDER TREATMENT.										PERCENTAGE OF DEATHS.										Total Number of		Average Percentage of Deaths.
	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	Cases.	Deaths.	
PRIMARY.																							
Thigh	2	..	1	1	2	4	1	3	1	3	..	..	100·	..	..	50·	100·	66·66	100·	100·	18	10	55·55
Knee Joint	..	..	..	..	1	..	2	..	1	..	..	..	..	..	..	..	50·	..	100·	..	4	2	50·
Leg	..	..	..	3	2	2	1	..	3	4	..	..	..	66·66	100·	50·	..	..	33·33	·50	15	8	53·33
Ankle Joint	..	1	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..	..	..	..	5	..	..
Shoulder Joint ..	..	1	..	1	..	..	..	..	..	..	..	100·	..	..	..	..	..	..	..	..	2	1	50·
Arm	3	3	3	2	2	3	3	3	..	1	..	..	33·33	..	..	..	33·33	..	..	..	23	2	8·69
Forearm	..	..	2	2	2	1	5	3	..	3	..	..	..	50·	..	..	..	..	..	..	18	1	5·55
SECONDARY.																							
Thigh	..	1	..	2	..	1	1	..	1	3	..	..	..	50·	..	100·	100·	..	..	66·66	9	5	55·5
Leg	1	1	2	..	1	2	..	3	2	1	..	..	..	..	100·	..	..	..	50·	100·	13	3	23·07
Arm	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..
Forearm	..	1	..	..	1	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	5	..	..
Shoulder Joint ..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	100·	..	..	1	1	100·

OPERATIONS.	CASES UNDER TREATMENT.										PERCENTAGE OF DEATHS.										Total Number of		Average Percentage of Deaths.
	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	Cases.	Deaths.	
FOR DISEASE.																							
Hip Joint	1	2	..	1	2	..	3	..	3	2	..	100·	..	100·	100·	..	66·66	..	33·33	50·	14	9	64·28
Thigh	12	19	18	9	14	19	27	23	25	15	..	10·52	27·77	11·11	7·14	10·52	14·81	17·39	24·	13·33	181	27	14·91
Knee Joint	2	..	..	..	..	..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	5	..	..
Leg	7	7	9	2	7	9	9	8	10	5	14·28	..	..	50·	28·57	..	..	..	10·	..	73	5	6·84
Ankle Joint	8	9	7	6	5	15	14	9	14	8	..	11·11	..	16·66	..	20·	7·14	..	7·14	12·5	95	8	8·42
Shoulder Joint ..	..	..	..	1	..	..	..	2	2	..	..	..	..	100·	..	..	..	50·	50·	..	5	3	60·
Arm	..	..	2	4	4	3	2	4	3	1	..	..	..	25·	..	33·33	..	25·	..	..	23	3	13·04
Forearm	1	4	3	2	4	2	4	4	2	2	..	..	..	..	..	..	..	..	..	..	28	..	..